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TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays, 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Iron and Steel Plan Stillborn

THE British Iron & Steel Federation's plan for the reorganisation and expansion of the industry has now been issued as a White Paper.* It includes technical and financial details of developments which it is proposed should take place under private enterprise over the next seven and a-half years at a cost of £168,000,000. Its primary objectives are to make good developments which were deferred by the war, to enlarge steel-making facilities, and to ensure the most effective use of plants by concentration into efficient units of appropriate size. The whole plan embodies a comprehensive scheme for complete re-equipment of the industry in all its branches. Because of the Government decision that the iron and steel industry is to be subjected to "a large measure of public ownership," the scheme is stillborn, and instead of a fundamental British industry being able to proceed with schemes which would add greatly to its competitive efficiency, the uncertainty which the Government announcement has engendered must make for deferment of development expenditure throughout the industry. The Federation of British Industries has issued a statement condemning the Government proposals and pointing out that in the iron and steel industry the processes vary widely. Its boundaries and those of the engineering industry are inextricably interwoven.

* * * *

Mr. R. J. M. Inglis

The retirement of Mr. R. J. M. Inglis from the L.N.E.R., of which he has been Divisional General Manager (Scottish Area) since 1941, took effect at a time when he was in Germany, carrying out important work as Chief of the Transport Division in the British Zone, with headquarters in Berlin. Since he went there in August last year, his organising ability, initiative, and energy have been reflected in the great improvement which has occurred recently in transport in Germany. Mr. Inglis joined the staff of the North British Railway at the beginning of the century and in 1910 he was Chief Assistant to the New Works Department. He had a wide experience in Civil Engineering affairs, both with his old company and its successor, the L.N.E.R. Before becoming Divisional General Manager, Scottish Area, in 1941, he had been Engineer (Southern Area) for five years. During the recent war he has spent a considerable time on important work for the Government outside this country. Among the missions he has undertaken was that of adviser to the Indian Railway Administration in 1943, in connection with which he received the C.I.E. in the King's Birthday Honours, after his return the next year. Apart from his work in the British Zone in Germany, he also gave much time to railway, road, and inland waterway transport and ports in Central Europe.

* * * *

Mr. William Lorimer

Mr. William Lorimer, who has vacated the chairmanship of the North British Locomotive Co. Ltd. on medical advice, is a distinguished member of a family whose connections with British locomotive building go back to the early days of that industry. In the North British Locomotive Company are merged the successors of the old Glasgow firm of Neilson & Company, with its offshoot, Dübs & Company, and the older Manchester firm of Sharp, Roberts & Company. Mr. Lorimer is the son of Sir William Lorimer, who was a partner of Dübs & Company, which was formed in 1864, and he himself joined that firm in 1897. When that firm was merged in the North British Locomotive Co. Ltd. in 1903, Sir William Lorimer became the first Chairman, and Mr. Lorimer a Managing Director; he is the sole survivor of the board as originally constituted. He became Chairman of the company in 1935. His son, Mr. Douglas Lorimer, is the present Managing Director of the company. Mr. William Lorimer is an elder statesman of the British locomotive building industry, which owes much to his wise counsel, his depth of knowledge, and his charm of manner. He was very largely responsible for the measures which enabled his company to make so marked a recovery from the depression which afflicted the whole of the British locomotive industry during the depression years of the

* Cmd. 6811. Iron & Steel Industry reports by the British Iron & Steel Federation and the Joint Iron Council to the Minister of Supply. H.M. Stationery Office, price 1s. 6d.

early thirties, and in a wider sphere his knowledge and advice have been of great value to the industry, as a whole. He is succeeded in the chairmanship of the North British Locomotive Company by Sir Frederick Stewart. Portraits and brief biographical details are given elsewhere in this issue.

* * * *

South Wales & Monmouthshire Joint Ports Committee

The South Wales & Monmouthshire Joint Ports Committee, which was established for the purpose of promoting the prosperity of the South Wales & Monmouthshire ports by taking joint action in matters concerning their welfare, has published a report of a special sub-committee set up to consider the question of development of the general cargo trade through these ports. After making the point that regardless of any success which may attend the efforts to increase the general cargo trade through the ports, full employment will be limited unless something approximating the pre-war level of coal exports is reached, the Sub-committee makes a number of recommendations for increasing the present level of traffic. These include proposals that the Government should be asked to direct to the South Wales ports a fair share of the cargo it controls; that representations should be made to shipowners (*a*) to resume pre-war sailings as soon as possible, and (*b*) to treat South Wales ports similarly to other ports and accept certain costs as a charge against sea freight; and to the Great Western Railway that (*a*) it should relieve shippers of at least a proportion of the dock labourage charges, and (*b*) should consider reducing the rates on traffic to the South Wales ports from places in the Midlands.

* * * *

Licensing of Goods Road Transport

The licensing system established under the Road & Rail Traffic Act, 1933, had been in operation for five years when war broke out in September, 1939. During this period the attitude which the railway companies adopted from time to time in lodging objections to the grant of new road haulage licences or the extension of existing licences inevitably aroused criticism which was disproportionate to the number of objections lodged. The licensing system remained in force during the war in an attenuated form, but it is understood that the pre-war licensing arrangements will be re-established in the near future. It is, therefore, gratifying that, as the result of discussions between the Road Haulage Association and the railway companies, agreement has been reached on a scheme which should facilitate procedure in connection with future applications for goods road transport licences. The scheme, which is purely voluntary and is not intended to fetter the discretion of the licensing authorities in any way, provides for joint Regional Licensing Sub-Committees, operating under the general supervision of the Road & Rail Central Conference.

* * * *

Promoting Co-Ordination

These Regional Sub-Committees will consider applications for "A" and "B" licences voluntarily brought before them, with a view to reaching agreements between the road and rail interests which will prevent it being necessary for the railway companies to lodge objections through the Traffic Courts. When agreement has been reached, it is understood that the applicant for the licence will be invited, in consideration of objection not being lodged to his application, to undertake not to make any substantial change in his agreed normal haulage operations during the currency of the licence without informing the Committee. If this undertaking is given, the Regional Sub-Committee will then submit a document to the licensing authority supporting the operator's application. The scheme, which will operate forthwith, is designed to promote the co-ordination of functions between road and rail transport and to reduce substantially the number of objections to be lodged, thus securing economies in time and expense and eliminating the spirit of antagonism which existed before the war. The Minister of Transport has intimated that he will bring the scheme to the notice of the licensing authorities. The success of the proposals is largely dependent on the road hauliers being influenced by their association voluntarily to discuss their applications with the Regional Sub-Committees.

Public Money for Non-Essential Works

In his speech at the annual meeting of the Canadian Pacific Railway Company on May 1 (reported elsewhere this week), Mr. D. C. Coleman, Chairman and President, drew attention to the revival of plans in Canada for subsidising with public money transport agencies which had proved inadequate for meeting the requirements of the war emergency. There had been an expanding programme of road reconstruction to adapt them for heavy commercial vehicles, without reference to whether such vehicles would pay their full share of the costs. Taxpayers had provided free facilities on inland waterways, and had helped to pay for airports and air safety devices. On the other hand, the railways had to own, operate, and pay taxes on corresponding facilities. The St. Lawrence seaway project was another enterprise which would have to be financed by general taxation on people overburdened by the costs of war, rehabilitation, and programmes for social security. In return for the expenditure, the country would have a transport facility of which the superfluity must be acknowledged in view of the satisfactory handling by existing agencies of the tremendous flow of goods and passengers during the war.

* * * *

"They Had Seven Months"

From the occupation of Holland by the Germans in May, 1940, until September, 1944, the railway system of the country was left practically intact, except for the theft of great numbers of carriages and wagons. On Sunday, September 17, 1944, the great Netherlands railway strike was called by the Allied High Command to obstruct German troop movements, and at once unleashed a storm of wrecking by the Germans that battered the Dutch railways almost out of recognition. The extent of the havoc in the seven months which ended with Allied victory is shown pictorially in a booklet with English text published by the Netherlands Railways at Utrecht, and entitled "They Had Seven Months." Numerous illustrations of pre-war scenes and equipment on the railways give an impression more graphic than words or statistics could convey of the annihilating destruction concentrated into the last months of German occupation. When stock of the position was taken after the German defeat, it was found that all the diesel-electric trains, 99 per cent. of the electric trains, and 84 per cent. of the locomotives had been destroyed or stolen; and 70 per cent. of the bridges had been destroyed.

* * * *

Burma Railways: Bridges in Peace and War

Lower Burma is an area with a very heavy rainfall and, as its railways run in the main between hilly country and the larger rivers, very heavy bridging was involved in their construction. When in Japanese hands these bridges provided many fine targets for British and American bombers, an advantage which they exploited to the full. They bombed and bombed again a great number of these bridges as soon as the enemy repaired them. After the collapse of Japan, however, the task facing the Indian Engineers of S.E.A.C. in the rehabilitation of the Burma Railways by restoration of so many large bridges was tremendous. On other pages in this issue we reproduce notes received from a correspondent in Burma, and a number of photographs, also taken in that country, giving some idea of the magnitude of the job in the area covered by the 10th Indian Railway Operating Group, I.E. As will be seen, the bridges concerned were almost all through truss span structures of a type permitting of maximum headway without unduly raising formation, combined with a minimum number of piers in these torrential-flowing streams.

* * * *

An American Smoke Consumer

Some valuable investigations have been made recently in the U.S.A., particularly on the Louisville & Nashville Railroad, into the possibilities of the steam-air jet for smoke abatement. The idea is very old, and a patent is stated to have been granted to M. W. Ivison in this country as early as 1838, since when hundreds of variations of the idea have been tried. The present work, however, is promising; already 350 locomotives on various American lines have been fitted with the "B.C.R." steam-air jet developed by Bituminous Coal Re-

search, Incorporated, and described in our contemporary, the *Railway Age*. The consumer (with which a silencer is combined) consists of a steam nozzle of, say, $\frac{1}{8}$ in. or $\frac{3}{32}$ in. dia., discharging into a horizontal air tube, and so drawing atmospheric air up a vertical inlet pipe, as in a vacuum ejector. The horizontal tube allows the combined steam and air flow to be discharged into the inner firebox. Each locomotive is provided with a number of these consumers; their exact location is important if the best results are to be obtained. In general they may be about 24 in. apart and about 16 in. above the grate; they may either replace stays or be located between them. The number required depends on the grate area. One 2½-in. induction, with a 2¼-in. outside dia. air tube and $\frac{3}{32}$-in. steam nozzle has been found sufficient for 10 sq. ft. of grate for Louisville & Nashville shunting locomotives burning not more than 50 lb. per sq. ft. per hour. The silencing effect is produced by loosely packing the air inlet vessel with Fiberglas or rock wool.

* * * *

Passenger Class Distinctions

MANY excellent papers are presented to the Institute of Transport from time to time on a wide variety of subjects. These essays are either summarised in the Institute's *Journal* or reproduced in full, but we have often thought that some of the communications were worth preserving in permanent form. We are therefore gratified that the Council of the Institute has permitted Mr. Charles E. Lee to elaborate the paper which earned a Railway Companies Association Award in the 1944-5 session. As a result we have before us a specialised study of the development of passenger rail transport in this country under the title of "Passenger Class Distinctions."* In a happily-written foreword, Mr. C. E. R. Sherrington, Secretary, Railway Research Service, says that "the booklet, embellished by judiciously-chosen illustrations, will be of considerable value to those whose privilege it is to be responsible for the passenger traffic facilities on the British railways," as well as making an appeal to many people, at home and abroad, who are interested in the movement of passengers.

Mr. Lee's treatise is a pleasant blend of ancient and modern. He starts with the Stockton & Darlington Railway, which left passenger business to private coach proprietors paying toll for the use of the line, and finishes with the Order from the Ministry of War Transport that, from October 6, 1941, trains beginning and ending within the London Passenger Transport Board Area were to be third class only. A mass of instructive detail is condensed between these extreme instances. The reader learns that the Great Western Railway set out to cater for only the superior classes of passenger, but in 1840 had three grades—first class, second class in open carriages, and "goods-train" passengers conveyed in uncovered wagons fitted with seats 18 in. high. The potentialities of neither democratic travel nor goods traffic were appreciated in those days.

A change was slow in coming even after W. E. Gladstone's Act of 1844, which introduced Parliamentary fares of not more than a penny a mile. The charging of supplementary fares on Pullman and certain high-speed trains in the period between the two wars was a revival of the express fares which some companies, including the London & North Western, were still collecting in 1865. Seven years later the Midland Railway threw all its trains open to third-class passengers. Then the Cheap Trains Act of 1883 made workmen's fares of general application, to the joy of economists like Alfred Marshall who saw a great opportunity created for the railways to alleviate the lot of the poor.

All these happenings are explained in Mr. Lee's pages with a precision that can only be the outcome of much patient enquiry. He also touches on the provision of various amenities such as the lighting and heating of carriages, restaurant cars, and sleeping berths, but does not attempt to deal at length with the development of rolling-stock appointments. The main aim of this attractive little book is to establish that in a hundred years or so the altered relations between the railways and the travelling public constitute a remarkable social change. His theme will repay careful study.

* "Passenger Class Distinctions," by Charles E. Lee, F.R.S.A., A.M.Inst.T., etc. *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1. Price 6s.

Legal Control of Locomotive Design

A LEGAL decision of unusual interest to all concerned with locomotive design, construction, and operation, was given in the High Court of Justice (King's Bench Division) by Mr. Justice Denning on February 28. The principal point of general interest is that it was held that the failure to adopt specific technical improvements in locomotive design constituted negligence, making the railway company responsible for the operation of such locomotives liable for full damages for fires resulting from locomotive sparks. At Common Law, if a person uses a locomotive, he is bound to keep it from doing injury, and if sparks escape and cause damage he is liable for the consequences, whether he has been negligent or not. In the case of railway companies, however, that Common Law rule has been modified considerably by Statutory Powers under which it is made lawful for the railway companies to use locomotives, and, by virtue of such Statutory Powers, they are not liable for damage which is necessarily incidental to such use of locomotives. A House of Lords decision of 1893 laid it down that it was now well settled law that, to establish a case of liability against a railway company in such circumstances, it was essential for the pursuers to establish negligence—in effect, the onus of proof lies with the plaintiff.

It appeared in evidence in the recent case before Mr. Justice Denning that the London & North Eastern Railway had been concerned with a whole series of fires in five southern counties served by its system. During 1943, the number of fires notified to the L.N.E.R. which had been caused by sparks from its locomotives, was no fewer than 1,519; in 1935, it had been as high as 3,614. Since 1905, railway companies have been liable absolutely for such fires up to a £100, and since 1923 up to £200. In 1943 they paid claims for £50,000 even on the limit of £200. Most claims are under the maximum figure, but, even if every claim had been paid out at the maximum, the full total would have been only £60,000.

In the recent decision, the plaintiff, a Mr. Parker, suffered a loss to his crops in Norfolk agreed at £4,630 as a result of a locomotive hauling three coaches along the branch line between Heacham and Wells on August 20, 1943, emitting a piece of incandescent material which fell into a field of barley and caused the eventual destruction of 110 acres of crops. Mr. Parker contended that this damage was not necessarily incidental to the use of locomotives, but suggested that the construction of the engine itself was not in accordance with the best modern design, and, indeed, that the company had failed in its duty in the matter. In Freemantle *v.* London & North Western Railway Company (10 Common Bench, New Series, at page 92), Mr. Justice Williams, in summing up to the jury, applied the test for negligence that a railway company, in the construction of its locomotives, was not only bound to employ all due care and all due skill for the prevention of mischief accruing to the property of others by the emission of sparks or any other cause, but was bound to avail itself of the discoveries which science had put within its reach for that purpose, provided they were such as it was reasonable to require the company to adopt in the circumstances.

In the present case, Mr. Justice Denning applied this test in the following terms: "Ever since railway engines were invented, or very soon after, this problem of sparks has been considered by the engineers and in turn by the Courts. In the early days of the last century, or even up to 1890 or thereabouts, attempts were made to prevent sparks by using grids, rather heavy spark arrestors, and it was found that the use of those grids entailed a much higher draught being created, and they caused more trouble than not. When the new vortex blast was discovered it was proved to be much more efficient than the other type of spark arrestor, so that the old arrestor was omitted from the engines and reliance placed on the blast plus what has been described to me in this case as the brick arch. The brick arch was not designed for the purpose of preventing sparks; it was designed for the purpose of improving the combustion of the coal. As combustion is improved, so there are less sparks, and at that time, about 1890 or 1892, it is plain that there were no devices in the smoke-box, no spark arrestors which were of any use.

"The best way of treating the matter was found to be from the other end, from the firebox end with the brick arch. If one considers the cases which were decided at that time, there is Groom *v.* Great Western Railway Company, which

was decided in 1890 and is reported in 8 *Times Law Reports*, page 253. There the jury found for the defendants when there was no spark arrestor, but there was this other system of firebox. In the case of the Port Glasgow & Newark Sailcloth Company *v.* the Caledonian Railway Company, in 1893, again there was no spark arrestor, but there were these other means. There the fire was in 1890 and reached the House of Lords in 1893, and, again, the company was held not guilty of negligence. Finally, there was the case of the Earl of Shaftesbury *v.* the London & South Western Railway in 1893, and, again, no spark arrestor of any kind, and the company held not guilty of negligence and not liable. That is as far as the reported cases carry us.

"Of course things have travelled a good deal since 1893. Sir William Stanier, whose evidence has much impressed me in this case, told me of how a professor in the United States had been experimenting in about the year 1901, as the result of which, really not to stop sparks but to improve the performance of the engine, he brought out a plate designed to equalise the pressure in the engine. It was a plate that was designed to go into the smokebox, go down in front of the tubes, and then horizontally along and around the blastpipe. It was designed to promote a more uniform draught and to produce a good steam. After a lot of experiments this Professor Goss introduced this plate, the pressure-equalising plate, as I might describe it, and as a result most of the American railways adopted it. There was no doubt that, although the purpose of that plate was primarily to improve the performance of the engine, it had incidentally quite a valuable effect in stopping sparks, or big pieces of cinder or ash, which are the sparks coming through the tubes; instead of going through and up into the vortex blast and going out of the funnel, they hit against the plate, and quite a large number of them fall down to the bottom of the coalbox; so it has the double effect.

"The Great Western Railway Company in this country in the year 1903 started to adopt it. Indeed, it is interesting to notice, by a case to which the Bar Librarian has given me access, that in the year 1900 the Great Western Railway Company was beginning to experiment then on those lines. A jury, incidentally, at that time found against the company because the engine which emitted the spark then had not one of those plates. It looks as if that was the decision on the facts, but in 1903, at all events, as Sir William Stanier told me, the Great Western Railway Company started putting them in, and in 1914 the company put them in the main-line engines. Coming down to 1945, the position is that it is eminently the main type of fitting in the Great Western Railway engines. In the booklet of 1945 which the company issues to its drivers, the engine diagram shows the plate, not described now as a pressure-equalising plate, but as a spark plate. In the instructions to drivers it is said: 'In most smokeboxes spark plates are fitted in front of the tubes and below the top of the blastpipe. The purpose of this is to distribute the effect of the blast evenly over the whole tube plate and to reduce the number of sparks thrown up the chimney.' The plates were introduced, as Sir William Stanier told me, to equalise the pressure and improve the performance, but they have incidentally the effect of reducing the number of sparks, and now are given another name, the name being spark plates.

"Sir William was asked: Was there any trouble in fitting it to engines such as the London & North Eastern Railway uses; would it interfere with the steaming of the engine such as was used on this line at this date, namely, No. 8878? He said he did not believe it would interfere with the steaming of the engine, and all the engines he has put them in have steamed all right. The matter does not stop there. It is quite plain that in the United States this pressure-equalising plate has been improved. I believe at one time that the brick arch was not much used in America; it apparently, according to the evidence, is now becoming much more universal, but what they have there now is not only this plate, they have a mesh or netting stretching up from the front corner of the plate towards the front of the smokebox, making a mesh of netting preventing any big sparks getting out at all. It is quarter-inch mesh, because mesh which is too large is useless, as it lets the sparks through, and a mesh which is too small will require too big a draught, and in the United States (I have been given a diagram of what is used on the Baldwin locomotive) they use in effect this plate which was the pressure-equalising plate, coupled with this net or mesh.

"It is suggested, or it might be suggested, that that will impede the steaming of the engine, but as to that the answer is that the witnesses agreed—Sir William Stanier certainly agreed—that the London Midland and Scottish Railway was now putting into all its new construction appliances of this kind such as are put in the American engines. It is a case where, whatever theory people may have had before, practice has proved that this has advantages, because not only does it equalise the pressure so that those lower tubes do not get blocked up and all the tubes work efficiently, but as the draught goes round the bottom of the plate it cleans out the smokebox too, so that this is sometimes called a self-cleaning smokebox. So it has the advantage of equalising pressure, cleaning the smokebox, and arresting sparks or preventing the big ones coming out.

"Mr. Thompson, the Chief Mechanical Engineer of the London & North Eastern Railway, told me that his company has some on some of its engines and has got two in passenger tank engines which are being tried out. It is quite plain to my mind that since 1901 a different device has come into being which does not impede steaming at all, which equalises pressure, and which does help to prevent big sparks coming out. It is a system which the Great Western Railway Company tried out in 1903 and proved by the year 1914. It has been perfected since in the United States and is now being applied in this country by the London Midland & Scottish Railway, and apparently adopted by the London & North Eastern and being tried out by that company.

"The question which I have to decide is whether, before this fire in 1943, the London & North Eastern Railway Company ought to have adopted some such precautions or taken reasonable precautions in the running of its railway. Upon that, it seems to me that the company ought to have kept at least as closely abreast of development as the Great Western Railway Company; it ought to have kept in touch with the developments in foreign countries. It is quite plain that in nearly all countries in the world some device is used for dealing with sparks, and this system which has been adopted in the United States of America and Canada is recognised as being the best system. It seems to me that as the L.N.E.R. was bound to avail itself of all the discoveries which science has put within its reach for that purpose, it was bound to adopt them, provided that they were such that, in the circumstances, it was reasonable to require the company to adopt. It seems to me it was reasonable for the Great Western Railway Company to adopt them in 1914, and by 1935, or certainly immediately after that, with the experience of that time—in 1935 there were 3,600 fires in those five counties—it was reasonable for the L.N.E.R. to put in at least this pressure-equalising plate which I am satisfied in all probability, if it had been in this engine, would have stopped a big cinder of this sort from escaping; in all probability it would have hit the deflector plate and gone down to the bottom of the smokebox. Mr. Thomas said when he compared the ash in one of the Great Western engines with the ash in the North Eastern Railway engine, the Great Western engine had more of the bigger cinders or particles than had the engine of the North Eastern Railway, because more had been stopped by that plate.

"The position, therefore, is that I find reasonable precautions would have demanded the introduction at a far earlier date of a pressure-equalising plate in the particular engine, which would have improved the draught and incidentally would also have stopped some of the sparks coming out in this way. . . . It seems to me, on all the evidence that I have heard, the experts called for the plaintiff and Sir William Stanier for the defendants, that these precautions should have been adopted earlier.

"Mr. Thompson, the Chief Mechanical Engineer of the London & North Eastern Railway, I am sure, is doing everything and putting everything in now. He has only come on the scene comparatively late. he was not in charge in 1935, but after the year 1935 he could not remember anything particular which had been done. I think something should have been done. With the example of the Great Western Railway before it, and the example of foreign companies, I think steps should have been taken then by the L.N.E.R. to improve this engine." Mr. Justice Denning held, therefore, that reasonable precautions were not taken, such as the test in the Freemantle case demanded, and, sitting as a jury, found for the plaintiff and gave judgment accordingly for the sum of £4,630 with costs.

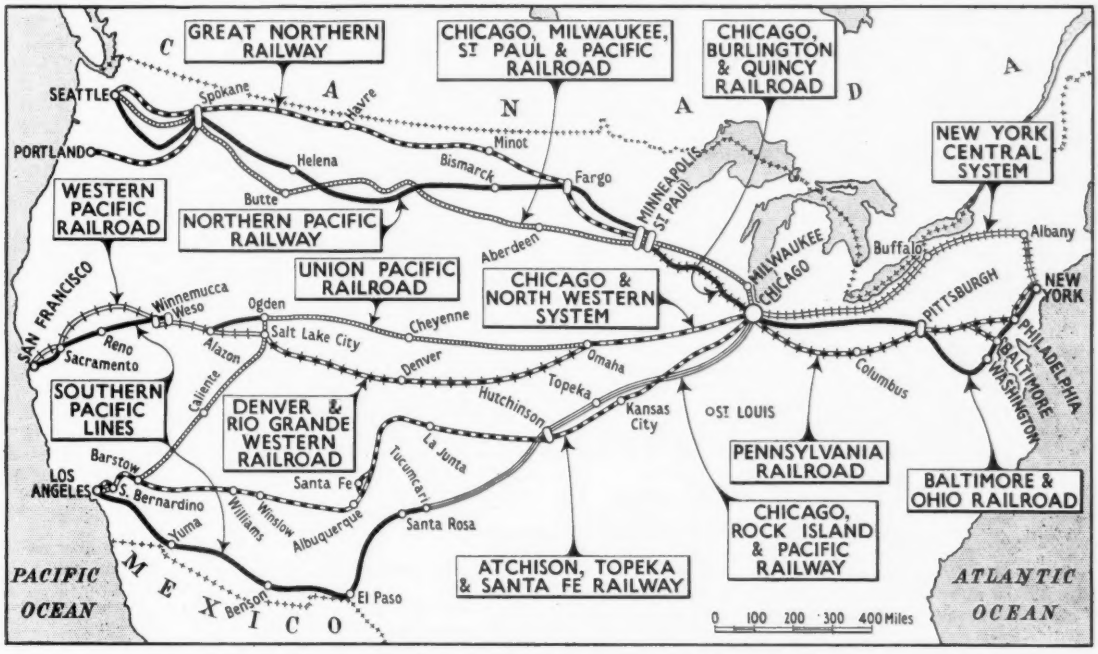
Passenger Service Developments in the U.S.A.

HISTORY was made in the United States on March 31, when the first through sleeping-car services in American history began to operate daily between the Atlantic and Pacific coasts. In Canada for many years both the Canadian Pacific and the Canadian National Railways have had through trains in service between both Montreal and Toronto, in the east, and the Pacific port of Vancouver in the west, and, though these eastern cities are not strictly on the Atlantic, Montreal at least is on the tidal waters of the St. Lawrence River, and ranks as an Atlantic seaport. But whereas the C.P.R. and the C.N.R. have their own individual main lines stretching across the width of the continent, in the United States the great eastern systems terminate at Chicago and St. Louis, and in these "gateway" cities, until now, a change of train has been essential for the transcontinental railway passenger. In Chicago, also, there has been the additional disadvantage of a change of station.

Since the war this discontinuity of service through Chicago and St. Louis has come prominently under review. The first railways to bestir themselves in the matter were the Chesapeake & Ohio, Lackawanna, and Nickel Plate, but as their trains from the eastern cities into Chicago are slow as compared with those of the leading lines, no anxiety was shown by the railways west of Chicago to forge the necessary link for making through running possible. Now, however, the New York Central System and the Pennsylvania Railroad have moved, and at length the first through Atlantic-Pacific service is in operation. From March 31 the New York Central "Twentieth Century Limited" and the Pennsylvania "Broadway Limited," have each carried all-room sleeping cars for Los Angeles, worked round from the La Salle Street terminus to the Dearborn station at Chicago to be attached to the "Chief" streamliner of the Atchison, Topeka & Santa Fe Railway. The "Chief" is also carrying a through sleeping car for Los Angeles, brought from Washington by the Baltimore & Ohio Railroad. Since then additional cars have been put in operation between both New York and Washington and San Francisco and Los Angeles by the Chicago & North Western-Union Pacific-Southern Pacific route from Chicago. From June 2 similar through facilities will be established jointly by the Pennsylvania and Rock Island companies between New York and Los Angeles by the Golden State route; and on alternate days from New York through New York Central and Pennsylvania, cars run to San Francisco by way of Denver.

This is only the beginning of post-war passenger development in the United States. From April 28 the "Twentieth Century" and the "Broadway" reverted to their 16-hr. run between New York and Chicago, which have been slowed to 17 hr. during the war emergency. The New York Central, with its route of 958 miles, has to maintain an average speed of virtually a mile-a-minute throughout, stops included, to make this timing effective; the Pennsylvania has a shorter distance of 902½ miles, but the considerable handicap of Gallitzin summit, nearly 2,200 ft. above sea level, to negotiate in its run through the Allegheny Mountains. Not only so, but five other Pennsylvania expresses, including the "General," the "Admiral," the "Golden Arrow," and the all-coach "Trail Blazer," will make the same run in 17 hr. overall, with a corresponding number on the New York Central System, and this will entail considerably more high-speed running than before the war. An important factor in these accelerations is the availability of the powerful new "T1" class 4-4-4-4 express locomotives on the Pennsylvania, and the 4-8-4 "Niagara" class on the New York Central. Moreover, the first diesel-electric passenger locomotives owned by the latter company are now at work on the "Twentieth Century," and when both competing routes have sufficient diesels, the New York-Chicago journey is to be made in 14 hr., possibly without night travel.

In many ways the year 1946 bids fair to be one of record development in United States passenger travel. New streamline trains are being built by the Great Northern and the Burlington lines, to provide daily high-speed service between Chicago and Seattle, with a cut in the overall time from 58½ to 45 hr.; the Milwaukee Road is doing the same with its "Olympian" between Chicago and Seattle; the Burlington, Rio Grande, and Western Pacific companies similarly are transforming the "Exposition Flyer" from Chicago to San Francisco, *via* Denver and Salt Lake City, into a streamliner. Diesel-electric locomotives, of course, will haul these trains, and many others which are being changed from their present standard steam-hauled stock to the latest streamline equipment, such as the "Sunshine Special" of the Missouri Pacific and the Texas & Pacific, the "Texas Special" of the Missouri-Kansas-Texas and the St. Louis-San Francisco, the Frisco Lines "Meteor," and many more. The Baltimore & Ohio Railroad is introducing diesel-hauled streamline trains which will make the run between Washington and Chicago without night travel. Cuts of 12 to 14 hr. are being made in the schedules of a number of trains between Chicago and the Pacific coast.



Principal centres and links served by through Atlantic-Pacific routes

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Bradshaw

United University Club,
Pall Mall East, S.W.1. May 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The railway companies gave wide publicity to the fact that on May 6 there would be great improvements in the train service, and from the extent of their advertisements I infer that they wish the public to travel. But how can anyone plan a journey if he cannot discover what trains are running? For several years it has been impossible to buy a copy of *Bradshaw*, and even the *A.B.C. Guide*, which shows only trains going to or from London, is unobtainable in London today (May 9). Surely the time has now come when *Bradshaw* should be again in circulation, and publication should follow promptly whenever new services are introduced. Half a century ago the late Sir William Acworth used to complain year after year about the delay in the issue of the July *Bradshaw*; at that time the companies were in keen competition and each avoided disclosure of contemplated improvements until the last moment, but today there is not even this excuse for a guide's belated appearance.

Are we to reconcile ourselves once and for all to the prospect that never again will British railways attempt to deal adequately with passenger traffic? Must intending passengers for ever be content to stand, perhaps for hours, in a queue before being admitted to the platform; and when at last they reach the train, must they for ever be thankful for standing room in a corridor? It is usual to attribute overcrowding to the effect of the war, but in fact it has been common in certain services for many years; and as an overcrowded train produces a very large profit the companies are not eager to abolish it.

Must a business man travelling from Paddington to Birmingham for ever fight for standing room with trippers bound for Barmouth or Aberystwyth? Must passengers for Perth and Aberdeen never again travel as fast as they could travel in 1895? Must old travellers who remember the days when British locomotives were beautifully designed and beautifully maintained be for ever saddened by the vision of ugly engines crawling about the country in the last stage of filth and neglect?

All experience suggests that when the railways are nationalised, conditions will be even worse than they are now; and the only alternative left to us, which I for one regret, seems to be to press on the construction of express motor highways as quickly as possible.

Yours faithfully,
W. B. THOMPSON

Size of Railway Wagons

Eynesbury, St. Neots. April 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the correspondence published in your issue of March 15, Sir Charles Newton says that the transport methods of any country must reflect the requirements and customs of its trading community. But the British railways have never yet attempted—as the railways of other countries had done—to educate traders (including private wagon owners) to the advantages of using larger trucks, otherwise they would undoubtedly have long since have been in general use—especially if a proper rebate had been offered on them. In other countries a rebate of 25 per cent. is given on fully loaded 20-ton wagons, because they make for an economy of 50 per cent. in operating expenses, *i.e.*, only one 20-tonner is shunted, weighed, labelled, tipped, and repaired, instead of two 10-ton trucks. A train now hauling 40 trucks carrying 400 tons of coal, would then haul 40 20-tonners carrying 800 tons, or forty 40-tonners carrying 1,600 tons—a common load in many countries hauled on a single coupling and without the use of a continuous brake. (Particular attention should be directed to the type of coupling used on American 40-, 50-, and 60-ton wagons).

Personally, I have no time for 20-ton wagons, and consider that 40-tonners should be the minimum type for future use on the British railways, as they are much more economical vehicles. For example, is it realised by colliery companies and other big users of the railways, that a 50-tonner possesses only eight wheels, four buffers, and two couplings, compared with 20 wheels, 20 buffers, and 10 couplings of five 10-ton trucks? Consequently, it costs less than half as much, and occupies less than half the siding space.

In claiming that our standard 4-wheel wagon is the only type which industrial firms and collieries can handle conveniently in their private sidings, Sir Charles overlooks the fact that locomotives—which are larger than 40- or 50-ton wagons—actually enter all these places.

With the rapid deterioration in their financial position, the railway companies might well, therefore, turn their attention to the heavy economies attainable from building 40-, 50-, or 60-ton trucks. The clearance of congestion, and the savings in locomotives and train-crews, would enable them to carry a far greater amount of better-paying passenger traffic.

Yours faithfully,
E. R. B ROBERTS

[Our correspondent puts forward an essentially sound argument, *i.e.*, that it is more economical to transport bulk loads in large wagons, but he overstates his case. There is no reason why 20-ton coal trucks should not be standardised and manufactured in large numbers to replace existing 10- and 12-ton types. But more than half of the colliery concerns would have to improve their sidings, and in 1929 the cost of altering the colliery screens to enable them to use 20-ton wagons was estimated at £2½ millions. However, this would be the colliery companies' worry (or the National Coal Board's), not the railways'.

To change over to 40-ton trucks, however, would present many more difficulties; and incidentally, as Sir William Stanier pointed out in the discussion following Mr. Kelway Bamber's paper at the Institution of Locomotive Engineers, entitled "Coal and its Post-War Carriage on British Railways," two 20-ton, four-wheel wagons give a better load/tare ratio than one 40-ton double-bogie wagon. An axle-load of 15 tons is the absolute maximum for operation over industrial sidings or branch lines; consequently 30 tons is the outside limit for the total weight of a 4-wheel wagon, allowing a load of slightly over 20 tons. For 40-tons capacity, obviously a bogie wagon would be required and there are few colliery lines which would be able to take wagons of this size without extensive relaying or alteration. It is not correct, as our correspondent suggests, that main-line locomotives can enter all private sidings.—ED., *R.G.*]

A Neglected Point in Switch Design

22, Velmore Road,
Chandlers Ford,
Eastleigh, Hants.
May 10

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your contributor might have made this heading, "A Neglected Point in Track Layout."

The whole point of the matter is that while the "gauge" is 4 ft. 8½ in., the effective gauge, and the more important figure where crossovers, switches, or check rails are fitted, is the distance from the inside of rail to the flangeway face of the opposite check or point rail, that is, 4 ft. 6¼ in. This figure is constant whatever the gauge and should be as carefully maintained as the 4 ft. 8½ in. figure.

A check rail is presumably fitted to relieve the outer rail of some of the side thrust on curves and to guide one wheel while the other is passing gaps in the opposite rail as in "frogs," crossovers, etc., so that the inside of the inside tyre should touch the check-rail when the outer wheel flange touches the outer rail.

It is not possible to ensure that this happens when the flanges are worn, but as a compromise a figure somewhat less than 4 ft. 6¼ in. could be fixed, and it should be a simple matter to see that this distance was maintained at both positions of switches and at all check rails.

I have seen several instances of extra lead cut on the splayed ends of check rails and have noticed that the head of the check rail was badly worn and, on checking the 4 ft. 8½ in. gauge, have found that, although this was "wide" by as much as 1 in. or 1¼ in., the check rail flangeway was expected to remain at 1¼ in.

In the case of awkward layouts of crossings and points, especially when combined with sharp curves, the problem of maintaining the 4 ft. 6¼ in. figure mentioned above is complicated by the fact that this involves a flangeway of as much as 3 in. where the gauge is widened by 1¼ in., and if this is provided on carriage roads, crossing tracks or where passengers cross tracks (as in docks), it might involve legal complications as the result of the catching therein of cycle or road vehicle wheels, pedestrians' heels, etc., although this risk could be minimised by the filling of the flangeway to within 1⅛ in. of the rail level.

Yours faithfully,
S. R. STONE

The Scrap Heap

LONDON RAILWAYS PLAN

Nothing is more fascinating to the grown up man than to "play trains." The Committee has surpassed this by building a lot of new railways on paper, and they must have enjoyed their task hugely. But what is all this to cost? The estimates are £229 million for all the new routes, or £236 million if Route 12B is adopted instead of 12A.—*From "The Economist."*

* * *

At 7.27 p.m. on Friday, May 10, a shunting engine and a brake van were derailed at a point outside Euston Station where most of the lines converge, and blocked the lines to Platforms 6-15. The lines were cleared at 12.50 a.m., but it was some time after that before all the delayed passengers had got away.

Thousands of holiday-makers bound for the north had been held up while services were re-arranged. Trains left the station from one to three hours late, and incoming trains were stopped at Watford, passengers continuing by Underground.

* * *

The 7.40 a.m. train from Brighton, Southern Railway, on May 13 took 4 hr. 52 min. to reach Victoria, against the schedule time of 1 hr. 6 min., because of a broken rail between Balcombe and Three Bridges. After reaching Haywards Heath on time, it proceeded to Victoria *via* Hove, Worthing Central, Angmering, Ford, Pulborough, Billingshurst, Horsham, Three Bridges and East Croydon. Other up trains also were delayed. The line was repaired by 10.55 a.m.

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *May* 16, 1846

PERTH and INVERNESS RAILWAY.—The Committee of Management regret to inform the Shareholders of the Perth and Inverness Railway Company, that the Committee of the House of Commons has refused to sanction the making of the railway proposed by this Company.

The Committee of Management propose winding-up the concern, should the shareholders give their sanction at a meeting which will be summoned immediately after the passing of the Railway Companies' Dissolution Act.

It is impossible, at present, to form a correct estimate of the expenses incurred, but the Committee do not think they will exceed 10s. per share.

By order of the Committee,
PETER ANDERSON, Secretary.
Colonnade Hotel, Haymarket, London,
14th May, 1846.

PERTH and INVERNESS RAILWAY.—All persons having claims against the Perth and Inverness Railway Company are requested to send them, on or before the 31st current, to
PETER ANDERSON, Secretary.
Colonnade Hotel, Haymarket, London,
14th May, 1846.

SPARK FROM ENGINE COSTS L.M.S.R. £231

A spark from a passing railway engine caused a fire which destroyed furniture, clothes, and other articles in a flat in Leytonstone, early one morning in 1944. In the King's Bench division recently the occupier of the flat was awarded £231 damages with costs against the L.M.S.R. The company denied liability.

Mr. Justice Hallett said he was convinced that the engine was throwing out a considerable amount of sparks. He did not think that the coal, the gradient, the load, or the condition of the engine could account for it.

* * *

"No, I said the train would be sixty-five yards long WITHOUT the loco"

[*Reproduced by permission of the proprietors of "Punch"*

* * *

ALIGHTING FROM MOVING TRAIN

Nine people were slightly injured and many others had remarkable escapes when an L.N.E.R. suburban train crashed into the buffers at No. 4 platform at Liverpool Street Station on May 8. As it drew slowly into the station scores of passengers did what the railway companies have always asked them not to do—they jumped on to the platform while the train was still in motion. This saved many more from being injured, for a split second later the train crashed.

PERSONAL QUESTIONS

What's the most becoming thing you can wear?

To answer to that is a *pleasant* smile. The person behind such a smile has a big advantage. For a smile not only lights up your face, it reacts inside of you . . . actually helps you to be pleasant and good natured. Best of all, a smile is contagious. It wins smiles in return, and makes others *want* to do what you ask or feel confidence in what you say. Within an organization, a smile aids efficiency. And in dealing with customers, a pleasant smile is truly public relations improver No. 1. Try it and see!

[*From "Company Manners" issued by the New York Central System*

ANSWERS TO L.M.S.R. PASSENGERS

Below is a reproduction of the front cover and the opening text of a booklet recently issued by the L.M.S.R.:—

WHY? WHY? WHY? WHY? WHY?

The L M S answers your Questions

WHY? WHY? WHY? WHY? WHY?

WHY?

In Britain today there are shortages everywhere. You cannot buy all the commodities you want—food, clothes, furniture, houses. Advertisements in the newspapers hold out promises of the good things you will be able to get "tomorrow" but they are rarely available "today."

The L.M.S.R. is in no more fortunate position than you are. But generalities, however well appreciated, do not seem to provide a satisfactory explanation. That is why we are taking the unusual step of publicising the late running of our trains.

To tell you the present position, we have been influenced by three considerations:—

1. That you, our patrons, should be told the facts so that you may judge for yourselves.

2. That by taking you into our confidence you should have a better understanding of what we, as a transport undertaking, are up against.

3. To assure you we are taking steps to alleviate, so far as possible, immediate difficulties. Further, to let you know that, besides these "stop-gap" activities, we have a long-term policy for the modernisation of our industry.

The principal factors affecting the L.M.S.R. are shortage of trained manpower, shortage of rolling stock and mechanical equipment, arrears of maintenance and renewals, and shortage and inferior quality of coal, all as a legacy of the war years.

But every other industry has enjoyed breathing space to reconvert itself from wartime to peacetime activities. Moreover they have been able to do their jobs behind closed doors. In ours, we haven't had one minute of breathing space to make the reconversion, yet we hear the question many times—the war is over, why are the railways not back to pre-war standards? L.M.S.R. railwaymen and women are human and react to encouragement, and because they are working against many difficulties beyond their control, we feel it is time to put the case before you by making public the questions you ask us and by giving you the answers, as we know them. Since the principal "Whys" you raise are about delays and timekeeping, we deal with them first.—*From "The L.M.S. Answers Your Questions."*

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

NIGERIA

War Effort of the Railway

In the initial stages of the war, the immediate effect was a general fall in traffic on the Nigerian Railway. At that time there seemed little likelihood of West Africa becoming a major theatre of war; however, train services were curtailed as far as possible to conserve resources. Throughout 1940 the position remained more or less static; then from 1941 onwards, demands upon the railway increased, reaching their peak in 1943, when they were more than double those of 1939.

First the Army, then the Royal Air Force and finally the U.S. Air Force came into the field with their heavy demands, and a special rate of 1·6d. per wagon-mile (0·9d. per ton-mile) was introduced for all such traffic. Personnel of the Armed Forces were also conveyed at this rate per coach-mile. Traffic carried at these special rates from April, 1941, to March, 1945, amounted to 340,300 tons and 645,700 passengers; these figures do not include individuals travelling on ordinary trains at ordinary fares.

All the time there was the demand from the United Kingdom for Nigerian produce, mainly groundnuts, palm oil, palm kernels, cocoa, cassava (starch), rubber, hides and skins and cotton; last but not least, there were tin concentrates and columbite, for with the loss of Malaya this was the sole British source of these most valuable commodities.

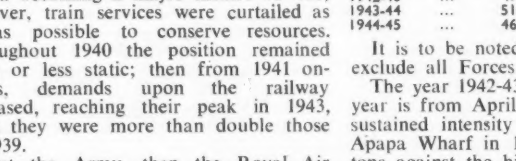
Deterrents to Passenger Travel

It became necessary to curtail to the utmost all non-essential traffic; consequently all concessionary fares were cancelled, privileged traffic suspended, and traffic in racehorses and polo ponies prohibited. The principle of a purchase tax on travel by increased fare was then applied, not to increase revenue, but to deter travel; increases in fares were first class 30 per cent., second class 50 per cent., and third class 100 per cent. A propaganda drive was made at the same time to impress upon the public that economy in resources was of the most vital importance. Nevertheless, though this did for a few months have the desired effect, less than a year elapsed before passenger travel was again steadily on the increase, which continued right through to 1945, as will be seen from the following figures:—

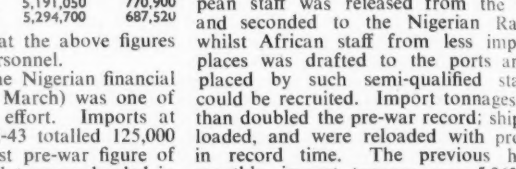
	No. of passengers		Receipts
	1st & 2nd	3rd	£
1941-42 ...	45,408	4,774,350	368,300
1942-43 ...	47,530	3,900,360	648,400
1943-44 ...	51,310	5,191,050	770,900
1944-45 ...	46,846	5,294,700	687,520

It is to be noted that the above figures exclude all Forces personnel.

The year 1942-43 (the Nigerian financial year is from April to March) was one of sustained intensity of effort. Imports at Apapa Wharf in 1942-43 totalled 125,000 tons against the highest pre-war figure of 53,500 tons. The total tonnage hauled in 1939-40 amounted to 914,000 tons, which in 1942-43 had risen to 1,500,143 tons, and later, in 1944-45, to 1,710,000 tons, or very nearly double that of the pre-war year. Engine-mileage, which in 1939-40 totalled 4,438,000 miles, rose in 1942-43 to 6,012,500 miles, and later, in 1944-45, to 7,076,600 miles. As the year progressed and the picture of war effort demands began to take shape, it became clear that considerable increase in facilities was urgently necessary, also a substantial increase in rolling stock and locomotives against specific projects. Works were undertaken at once or as material was available, and orders were placed for new stock and motive power.



Unloading a 4–6–2 + 2–6–4 Beyer-Garratt locomotive for the Nigerian Railway at Apapa Wharf



Heavy train of groundnuts at a crossing station on the Nigerian Railway, hauled by a Beyer-Garratt 4–6–2 + 2–6–4 locomotive

New Works

Work to the extent of some £137,000 was undertaken, and the pressing needs were met in time; the following gives a fair indication of what was done:—

1. At Apapa Wharf (Port of Lagos) 12 additional sheds with rail access comprising a storage capacity of 15,000 tons.

2. In the Apapa area, an assembly yard with off-loading lines, stacks and road-rail connection; also a special shed for the storage of salt in bulk with covered access for rail and road.

3. Extensive additions and improvements to track layout at all the major depot stations and the construction of 17 additional crossing stations to cope with the much increased traffic and number of trains run.

4. A short branch line and fourteen special sidings were constructed solely for Army use.

Record Traffic at Ports

Towards the end of 1942, port working had to be stepped up in order to cope with the heavily increased import traffic, and for the even more important question of the speedy turn round of ocean-going vessels. To this end 24-hr. working was introduced which necessitated the doubling of practically all the wharf staff at the ports of Apapa and Port Harcourt. European staff was released from the forces and seconded to the Nigerian Railway, whilst African staff from less important places was drafted to the ports and replaced by such semi-qualified staff as could be recruited. Import tonnages more than doubled the pre-war record; ships off-loaded, and were reloaded with produce, in record time. The previous highest monthly import tonnage was 5,262 tons (October, 1938), but the wartime record reached 11,045 tons (December, 1944). The loading of export produce handled ex-wagon or shed to ship averaged 120 tons an hour; one ship loaded 3,320 tons in 23 hr. (all produce shipped in bags).

Locomotives and Rolling Stock

Early in 1943 the new locomotives, 6 Beyer-Garratt 4-6-2+2-6-4 type and 20 American 2-8-2 type, began to arrive, together with 230 covered and 140 open wagons of 25-ton capacity; all the wagons were from America. Considerable adaptations were, however, necessary to the American locomotives and wagons to suit them to local conditions; further difficulties were caused by war shipping conditions, which resulted in the delivery to Nigeria of numerous portions not intended for this railway, and parts for this railway going elsewhere. Many of the troubles were overcome in the railway workshops, but the matter of sixty bogies of 4-ft. 8½-in. gauge for a 3-ft. 6-in. gauge rail could be met only by re-shipping. Details of the American locomotives and their difficulties were given in *The Railway Gazette*, June 22, 1945.

The new locomotives and rolling stock were invaluable, and without them the enormously increased traffic could not have been moved; at the same time every locomotive that could be put into service was worked to its breaking point. Spare parts were quickly used up and replacements, practically all of which had to be obtained from the United Kingdom, were in short supply. In 1939-40 the average

mileage per main-line locomotive was 28,819 miles, while in 1944-45 this figure had risen to 39,560 miles.

Exceptional Strain on Staff

The strain upon staff working under intense effort was acute and began to tell upon their health. Many men, in addition to excessive working hours, had given much of their remaining spare hours to local volunteer defence force work both by day and by night. Prolonged tours of 2 and even 3 years (the normal tour in Nigeria being 18 months), and the discomforts and dangers of sea voyages to the United Kingdom, also had their effect. In order to maintain the essential services, it was necessary to obtain releases of railwaymen of all departments from the forces to ease the burden on the much reduced permanent railway staff. The highest praise is due to all members of the staff who by their unstinted efforts and co-operation enabled the railway to meet all the demands made upon it with such marked success.

Road Motor Services

Like the locomotives, lorries were called upon to handle traffic that had never been envisaged, and suffered likewise from lack of spares. In pre-war years the railway lorry fleet consisted of 31 vehicles with 26 trailers. The average yearly vehicle mileage in pre-war years was 11,650, with a tonnage of 18,414; this rose to 16,000 miles and 31,473 tons in 1943-44. The railway motors operate as a feeder service and the roads over which they have to travel are far from good; such a thing as tar surfacing is almost unknown, and several so-called roads consist of little more than loose sand. Consequently an average of 15,000 miles a year is good; the highest individual mileage run was 40,916 miles by a 3-ton Albion (Perkins Leopard engine) with a 3-ton trailer.

Again, like the locomotives, motors suffered seriously from lack of spare parts and adequate supervision. In order to cope with traffic needs, 15 Chevrolet lorries of 2-ton capacity were obtained from the U.S.A. and took on the burden, averaging 21,000 miles between them during the busy months of 1943-44. Passenger traffic increased out of all proportion; in 1939-40 the number of passenger journeys was 3,883, and in 1944-45 it numbered 28,823.

General Working

Traffic requirements reached their peak in 1943; then, with the successful completion of the North African campaign, Nigeria together with the rest of West Africa ceased to retain its high importance and the high-pressure working appreciably eased so far as military traffic was concerned. Nevertheless, there was no relaxation for the railway, for the effect of the all-out working during the previous 4 years was beginning to tell, and general traffic (both passenger and goods) continued to increase, while the condition of locomotives and to a lesser extent coaching stock appreciably deteriorated. There was, and still is, an acute shortage of spare parts, which though on order from the United Kingdom for a very long time were not forthcoming. It was necessary to resort to local improvisation where possible, or to place locomotives aside, stripping them of parts to maintain other locomotives in service. Such, incidentally, is still the position.

Present Outlook

In June, 1945, a further setback was occasioned to the locomotive position by a general strike (see *The Railway Gazette* of November 2, 1945). This, coupled with the shortage of spares and overworking of locomotives, resulted in a cut of 35 per cent. in the operative capacity of the railway as from August, 1945, and there is every indication that the railway will have to continue to operate at this reduced rate for some considerable time. Locomotives indented for in 1944 are not likely to be forthcoming from Britain until 1947; meantime there is a remarkably heavy groundnut crop of 300,000 tons already marketed (March, 1946), but at least two-thirds of this cannot be transported for several months, and when the 1946-47 groundnut season begins in November this year, there is likely to be a carry-over of some 45,000 tons of the old crop together with some 19,000 tons of palm kernels; this is extremely unfortunate when Europe is so badly in need of cooking fats.

Orders either have been or are about to be placed for locomotives, rolling stock, machinery and plant for the Nigerian Railway to the extent of £1,857,000. Locomotive and rolling stock requirements are:—

34	main-line locomotives
15	shunting locomotives
23	main-line tenders
16	boilers
7	first-class sleeping saloons
7	first and second class coaches
2	restaurant cars
32	third class coaches
10	passenger brakevans
6	inspection coaches
6	breakdown train vans
1	travelling steam crane
50	bogie hopper coal wagons
25	bogie cattle wagons
40	bogie covered goods wagons
2	"crocodile" wagons

The policy of the Nigerian Railway is to obtain everything possible from the United Kingdom, but, owing to the present acute difficulty in obtaining delivery therefrom, it may be necessary to go elsewhere within the Empire, for, as indicated above, the need for undelayed delivery is vital.

FRANCE

New Steamer for Dieppe—Newhaven Route

A French-built steamer, named the *Arromanches* after the invasion landing beach in Normandy, was recently launched near Havre, and is now being fitted out to take its place in the Channel service jointly operated by the Southern Railway and the French National Railways Company (S.N.C.F.) between Dieppe and Newhaven. The passenger accommodation is all of one class. Principal dimensions of the vessel are:—

Overall length	308 ft.
Breadth	39·7 ft.
Displacement (with full load) ...	1,944 tons
Estimated mean speed	25 knots

Accommodation is provided for 1,450 passengers. The ship is equipped with the latest safety devices against fire. Protection against flooding also has been carefully studied. The *Arromanches* will be divided into ten watertight compartments, two steam pumps and an electric centrifugal pump being provided. Navigational aids will include wireless communication and direction-finding equipment, and a supersonic sounder.

Improvement in Goods Traffic

M. Maurice Lemaire, the newly appointed General Manager of the French National Railways Company (S.N.C.F.), in a recent statement to the press stressed the progress made in railway transport since the Liberation. Goods traffic at the present time, he said, represented 94 per cent. of the total in 1938. Although the number of wagons loaded was only 60 per cent. of the 1938 figure, that was due to changes in the type of traffic. Since the war, the bulk of the traffic had been carried on between the ports, the frontiers, and the interior of the country.

Dearth of rolling stock presented the most serious problem. Formerly France had 425,000 wagons, but now only 265,000. To cope with the locomotive shortage, France would continue to import American engines, built to French designs, until the country was in a position to produce a sufficient number itself. French workshops were busy repairing 700 locomotives recovered from Germany, and in addition were building more than 220 new engines, including 36 electric locomotives. To meet immediate needs, 1,200 locomotives had been ordered in the United States and 140 in Canada. Two diesel-electric locomotives of 4,000 h.p. were doing good work on the Paris—Mentone line, where they replaced five Pacific and two Mountain locomotives.

UNITED STATES

Pennsylvania Centenary

The Pennsylvania Railroad was one hundred years old on April 13. The original purpose of the railway was to parallel and supplement the service of that portion of the country's "main line of public works" between Philadelphia and Pittsburgh, which at that time consisted of canals and inclined planes. Construction of the Pennsylvania Railroad began in 1847, westward from Harrisburg, and was completed to the eastern terminus of the Portage Railroad in 1850. The western part of the Pennsylvania's line to Pittsburgh was completed to a connection with the western slope of the Portage Railroad in 1852, and all-rail transport was available thereafter from Philadelphia to Pittsburgh.

The railway expanded westward from Pittsburgh, and direct lines reached into Cincinnati and Chicago in 1869 and to St. Louis in 1873. To the east and south it acquired the United New Jersey Railroad & Canal Company's lines between Philadelphia and New York in 1871, the Northern Central (Baltimore to Harrisburg and northward to Sunbury, Pennsylvania) in 1870, and the Philadelphia, Wilmington & Baltimore in 1881. The Pennsylvania-controlled Baltimore & Potomac established a through service to Washington, D.C., in 1873. Entrance into Louisville and Cleveland was secured in the early 'seventies by lease of existing lines.

At the present time the mileage of the Pennsylvania Railroad is some 10,115, including 670 miles electrified. As well as the parent line, there are more than 50 subsidiary railways, apart from joint-owned and shunting and terminal lines. The locomotive and rolling stock comprise some 4,900 locomotives, of which 321 are electric, more than 7,000 passenger cars, and 240,800 wagons.

ITALY

Milan—Florence Service

Electric traction was resumed in March on the 196-mile Milan—Bologna—Florence main line (*via* the Bologna—Florence *diretissima*), thus replacing the temporary steam working which had been introduced pending the restoration of the overhead system and other electric installations destroyed or damaged as a result of the war. Fast trains between Milan and Florence now cover the distance in an average of 5¼ hr., which is about the same as in 1942, although at that time the fastest train between the two towns took 4 hr. 40 min.

Development and Manufacture of Pre-Stressed Concrete Sleepers*

A description of the process of mass production of units for use in main-line construction

PRE-STRESSED concrete is a comparatively recent innovation in standard engineering practice in this country. During the war period, its application in a new field of engineering was investigated in England, for the construction of railway sleepers for fast sections on maain lines, and a method of mass-production of precast pre-stressed concrete units was invented.

The application of the track load on a sleeper is sudden and intermittent, and it is, therefore, most desirable, if a long life of a sleeper is to be assured, to avoid cracks occurring in the concrete. With ordinary reinforced concrete, when subjected to tension under bending loads, small hair cracks develop, and although this is not considered harmful for ordinary reinforced-concrete structures, it is harmful in the case of railway sleepers for main lines, as the heavy and repeated loads will cause these cracks to widen and finally to destroy the bond between the steel reinforcement and the concrete; this damage is accelerated by rain and frost.

Use of High-Tensile Steel

With pre-stressed concrete a high-tensile steel of 100 tons per sq. in. ultimate tensile strength is used for the reinforcement, and during the process of manufacture it is subjected to a high-tensile stress which is afterwards used to obtain a permanent compressive stress in the concrete. The initial compression in the concrete ensures that no hair cracks will develop under the design load conditions and the factor of safety allowed. The amount and distribution of compression in the concrete is determined from the load factors to which the sleepers are to be subjected. The criterion of a perfect sleeper requires the condition that the life of the sleeper is equal to the life of the rail it supports, thus reducing track maintenance to a minimum. By pre-stressing the concrete, surface-damage to the sleeper under load conditions is avoided.

In 1941 permission was given to construct an experimental yard at Colwall, Malvern, Worcestershire, to manufacture a type of concrete sleeper introducing the new technique of pre-stressing. Pre-stressed concrete sleepers made on this experimental yard were first supplied to the Ministry of Works for use on sidings, and the sleepers' performance was kept under close observation. The results of the tests, made in accordance with the requirements of the panel of the British Standards Institution, were studied by the authority concerned, and a sleeper to give the required strength for main-line load conditions was designed and produced, using the same method of pre-stressing, and was supplied to the L.M.S.R., L.N.E.R., G.W.R., and Southern Railway. The first delivery was to the L.M.S.R. in 1942 for installation in the fast down track at Cheddington.

The Colwall yard consisted of an open concrete apron 340 ft. long and 30 ft. wide with mass concrete abutments at each end. The abutments supported the heavy steel structures, to which the reinforcement wires under tension were anchored during the pre-stressing process. High-tension steel wire of 0.2 in. diameter, used in the reinforcement of the sleeper, was first passed through a combined cleaning and straightening machine. It was then threaded through the individual end plates of the sleeper moulds. Each mould, which consisted of an open steel trough, had at each end a removable end-plate holed to suit the distribution of the wires in the sleeper. After the wires had been threaded through the end plates the moulds were placed under the wires and the end plates secured. During this operation the wires were made off by wedges to a fixed anchor plate at one end of the apron and passed through a similar, but movable plate, at the other end of the apron.

When the required number of wires had been threaded, for two lines of sleepers to be manufactured, they were subjected to preliminary tension, by means of a hand winch, to remove sag, and then secured, also by wedges, to the movable or jacking plate.

Load Applied

The final tensioning was carried out by four hydraulic jacks which were inserted between the steel structures of the abutments and the jacking plate; the load applied was between 60 to 90 tons depending on the number of wires used for two lines of sleepers. When the tension was obtained, the last set of distance pieces was left to support the tension while the sleeper moulds were filled with concrete and during the time it set and hardened. The concrete was barrowed up to the position of the sleeper moulds, where it was poured and vibrated, using a pneumatic vibrator applied at the top of the moulds.

The concrete was cured for a period of 10 to 14 days, depending on weather conditions; the tension in the wires was constant for this period.

The sleepers were then detensioned. In this operation the hydraulic jacks were again inserted between the abutment structure and the movable plate; the latter was jacked out a short amount, so allowing the distance pieces to be removed and the jack plate to return, thus freeing the tension existing in the wires between the sleepers.

After the detensioning, the removable end-plates to the moulds were freed, and the wires burnt off flush to the concrete by an oxy-acetylene cutter. When the sleepers had been detached one from the other by the wires being cut through, they were de-moulded by turning the filled mould over on its side and the sleeper carried clear of the production area.

New Manufacturing Technique

To satisfy the economic requirements for labour and material saving, a new technique of manufacture had to be evolved introducing the principles of mass-production. In 1943 a factory was designed on these lines; each stage of the process was fully mechanised, a close control of the materials was obtained and the necessary methods to reduce the labour factor was introduced, not only by the use of plant but by a new process of manufacture, resulting from the research made, so that the characteristic feature of pre-stressing was improved and maintained at a constant level for each unit produced. The factory was built at Tallington, Stamford, Lincolnshire; work on its construction was commenced in October, 1943, and the factory was completed with full installation of plant in August, 1944.

The Tallington factory has a manufacturing area of 500 ft. long by 140 ft. wide and allows for 20 production lines, each accommodating 100 standard main-line sleepers. Provision was made in the layout of the factory and plant arrangement for a second production unit, also of 20 production lines, to be built without disturbing the manufacturing programme on the first production unit. The conveyor system, special to this process, was designed to avoid undue fatigue for the operators, as all the individual processes were arranged to be carried out at "table height" and pneumatic apparatus was provided to perform any required lifting of either moulds or sleepers.

It was arranged to concrete at one position in each production line; the moulds supported on conveyors, with the stretched wires passing through them, are brought to this point of filling and afterwards pulled by means of a winch to their required place in the production line.

Fixed Filling Site

Filling the moulds at one fixed place in the production line, allowed a vibrating table to be used and a water/cement ratio of 0.39 for the concrete. When the filled moulds had been drawn up to their required position in the production line, they were given a secondary vibration to improve consolidation of the concrete and to ensure a perfect bond being obtained between the concrete and the steel reinforcement.

The modifications in the process introduced a simplified method of wiring; the coils of wire are carried on a truck, which is placed at the end of the production line to be wired, and the wires are drawn off under semi-tension, which obviates the need of first straightening the wires. As they leave the wire carrying truck they are automatically cleaned by passing through a scrubbing box containing carborundum granules. The tensioning arrangement was also simplified; instead of dealing with difficult loads of 60 to 90 tons at one time, a machine was designed to tension a pair of wires at a time in one operation.

Reduced Labour Costs

The method of manufacture allowed three minutes of working time per pair of sleepers during concreting and removal, this time factor also being maintained for the wiring processes. The reduction in labour costs using the mechanised mass-production process showed a saving of 88 per cent. on the original cost figures.

Pre-stressed concrete sleepers, in large quantities, made by mass-production methods, have been supplied to the British railways. In the short time which has elapsed since hostilities have ended and the markets abroad have been open, pre-stressed sleepers, made at Tallington, have been supplied to the State Railways of India, Egypt, and New Zealand for trial in their main lines. Shortly sleepers are to be manufactured for this purpose for Eire, the Sudan, and the South African Railways.

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* "The Development and Manufacture of Pre-Stressed Concrete Units," abstract from paper read by Mr. R. S. V. Barber, B.Sc. (Eng.), M.S.E., M.I.Struct.E., A.M.I.E.E., and Mr. D. R. Lester, B.Sc. (Eng.), M.S.E., A.C.G.I., before the Society of Engineers on May 6.

EXPORT LICENSING BRANCH: CHANGE OF ADDRESS.—The official address of the Export Licensing Branch (Board of Trade) is now Stafford House, 14-20, King William Street, London, E.C.4 (telephone: Mansion House 4555).

Restoration Work on the Burma Railways

Excellent progress made by last autumn in the Burma Theatre of Operations in restoring the many bombed bridges of the Burma Railways

Freak demolition of Zigon Bridge, the whole of the middle of the through lattice span being destroyed. Track now carried on plate girders over pile piers

WRITING from Rangoon on October 3, last, a correspondent sent interesting news of the position at that time in Burma and the excellent work being carried out in the restoration of rail communications there. It covers the whole area of the 10th Indian Railway Operating Group, Indian Engineers, S.E.A.C., and extends from Rangoon to Prome, 161 miles north-west; Rangoon to Swa, on the Mandalay line, 191 miles north; and Rangoon to Martaban—on the bank of the Salween River opposite Moulmein—168 miles eastwards.

The collapse of Japanese resistance, far from easing the strain on the railway operating troops, had forced the pace of advance to an extent impossible in wartime. Troops had to be carried forward—by rail as the only means of communication in some cases—to take over from the Japanese; whole divisions were involved.

So thoroughly had Allied airmen done their work that, in July, all bridges of any size were down both northwards and eastwards from Rangoon, and even on the Prome line, north-westwards, only 65 miles were usable. Services were run over this section, and subsequently the further isolated Paungde-Prome section was provided with a local service using locomotives and rolling stock recovered with it.

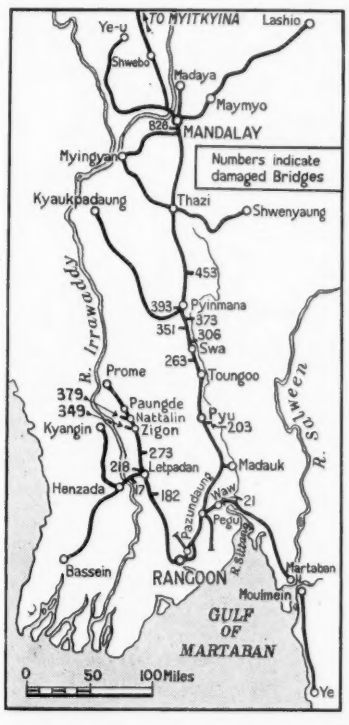
On the Mandalay line northwards from Rangoon a service was able to be run from Togyaunggale, 7 miles from Rangoon, across the big Pazundaung Bridge to Pegu, 40 miles further northwards. Apart from these services, all traffic was at a standstill due to demolished bridges in all directions. Those of considerable size or with large spans are shown by their numbers on the accompanying maps, and a number are illustrated.

Good Work by Indian Military Railway Engineers

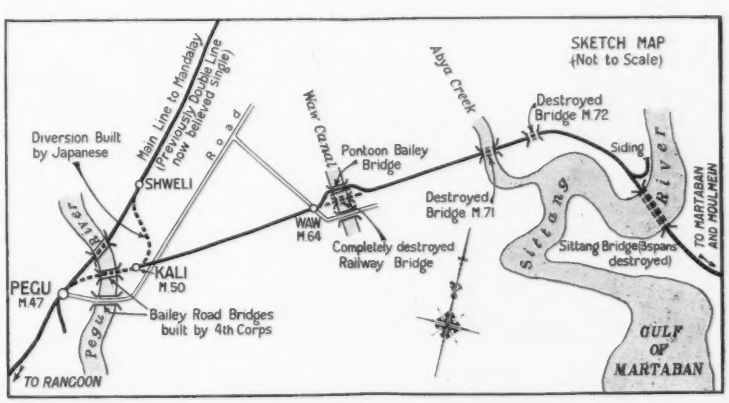
The Railway Construction & Bridging Companies, however, had done a wonderful job during the previous months, with the result that through running was restored to Prome on August 27, thanks to the completion of four major bridge reconstructions, and also as far as Pyu, 135 miles in the direction of Mandalay, as a result of four other big bridges having been rebuilt; this section of line was opened on September 5. These troops were then working at high pressure to repair all the other bridges on the remaining 250 miles to Mandalay and on the Pegu-Martaban section. Through running to Mandalay was, as a matter of fact, possible by about the end of the year.

The Pegu-Martaban section was a particularly difficult problem for the bridging companies. Immediately beyond Pegu the big Pegu River Bridge was seriously damaged, the Waw Canal Bridge, with its swing span, had ceased to exist; an illustration on page 542 shows practically no sign of it remaining. The Abya Creek Bridge was in much the same plight, and three of the spans of the great Sittang Bridge had been demolished; several other bridges beyond the Sittang were also seriously bombed.

This section of railway formed a particularly interesting line of communications. It was the line of advance for one of our divisions, and, as (1) the parallel road was under water; (2) all aircraft were being used to bring back prisoners of war, and (3) all shipping was fully employed in carrying prisoners of war, repatriates, and men for release, the whole division, complete with mechanical transport and supplies, had to be carried over this single metre-gauge line and its light temporary bridges. The Sittang River was expected to be a serious obstacle for some time to come, ferrying being necessary meanwhile.



Sketch map showing position of all demolished big bridges in Southern Burma



Sketch of the Pegu-Sittang section of the Martaban line, showing approximate positions of destroyed bridges

This feat was accomplished by throwing Bailey bridges across the gap at Mile 72 and the Abya Creek. Over the Waw Canal another Bailey bridge was floated on pontoons and a diversion of the railway laid over it. The track over the Pegu River Bridge and its approaches had been taken up, but a Bailey road bridge had been constructed by 4th Corps troops over the river nearby. Nine 5-ton Plymouth petrol locomotives were, therefore, carried by tank transporters over this road bridge and placed on the line where it crosses the road.

They were then run under their own power along the line and across the pontoon Bailey bridge to the east side of the Waw Canal. A few wagons found at Waw were also worked across, and on September 16 a train service was inaugurated. During the last 15 days of that month 5,000 troops and 2,770 tons of supplies—including 484 motor vehicles—an average of 185 tons a day, had been carried eastwards, and a total of over 4,000 prisoners of war had been brought back westwards.

The Plymouths with their 5-ton adhesion worked up to 9 trains a day, a magnificent job. On September 30 as many as 285 tons, including M.T., and 100 troops were moved eastwards, and 700 Japanese prisoners were brought back. At least 10 trains a day were expected to be running shortly afterwards.

Tribute to the Various Units

A detachment of the 102nd Indian Railway Operating Company, Indian Engineers, was then working this section, and previously the 170th Railway Operating Company (Burma) gave great assistance in making rolling stock serviceable before the arrival of the 102nd Company. Great credit was due to these companies, as it was also to the whole L. of C., including the 187th Indian Railway Construction Company and 60th Field Company (Indian), and all other engineers of 4th Corps and of the 17th Indian Division, not to mention C.A.G.R.E., who had been assisting.

Beyond the Sittang the railway was still out of action because of the number of bridges down, but from Donwun (Mile 117) to Martaban—just over 50 miles—the Japanese were working a service with two steam locomotives. Another section of the 102nd Company had, however, moved forward to take over the working of this section of line.

Conditions on other sections of the Burma Railways were very similar, and the great number of major bridges that had been destroyed and needed rebuilding was bound to make restoration of through communications a slow job. For it is one thing to construct Bailey bridges and work services over them with petrol locomotives for short distances, but quite another to restore a through main line nearly 400 miles long to Mandalay. That this restoration was completed so quickly was a fine achievement.

The number of big bridges on the Burma Railways is remarkable, and they had provided excellent targets at frequent intervals for the air bombers. The subsequent progress of repairs by the Japanese was closely watched by reconnaissance planes, so that further interdiction could be planned to coincide with the re-opening of each route by the enemy. The illustrations accompanying this article give a general idea of the damage sustained on the various sections of line in the southern half of the country.

It may be noted that the demolished Nattalin Bridge on the Prome line, illustrated on page 541, was subsequently replaced by one 165-ft. Callender-Hamilton type of military span and one 40-ft. span, supported by light standard trestling with camel's foot foundations. These trestles were described in the first of a series of articles on Standard Military Bridging published in *The Railway Gazette* of March 2, 1945.

Two of the other illustrations, one of them the headpiece to this article, reveal the curious way in which the whole of the middle of the Zigon through span was completely eliminated, leaving two panels at one end and one at the other standing stark and isolated like triumphal arches.

Complete Extinction of Waw Canal Bridge

The complete extinction of the Waw Canal Bridge, referred to above, is conclusively proved by the last illustration on page 542. No vestige remains of the big bowstring swing span or its supporting pier, apart from fragments of steelwork on the canal banks. The illustrations were selected from photographs taken on the Prome and Tharrawaw, Mandalay and Martaban lines to indicate how widespread was the damage to major bridges throughout Lower Burma.

Bridges, however, have not been the only targets. Most of the B.R. locomotives have been seriously damaged and the outlook for post-war transportation requirements is serious. For the time being, the serviceable locomotives were considered sufficient for military needs, as 19 "MacArthur" 2-8-2s from America had arrived and a further 16 were on order. A number of B.R. engines had also been reconditioned. There were 12 5-ton Plymouth petrol locomotives in service last autumn and the Beyer-Garratt locomotives which were held up in India have also now arrived in Burma.

PANAMA RAILWAYS AND BOUNDARIES.—At the request of the Panamanian Government, the Chiriqui Land Company recently rebuilt a section of its railway which formerly crossed Costa Rican territory, and moved it inside the boundary lines of the Republic of Panama. The company's lines are used also by the Government-owned 3-ft. gauge Chiriqui National Railway, and the change was a result of the desire of the Panamanian Government to keep the route of the railway within the jurisdiction of the Republic.

Power-Driven Hand Tools for the Civil Engineer's Department—3

Three-purpose tool for mortising and pillar or hand-drilling, the drill unit being removable from the stand

SEVERAL woodworking and building requirements are met by the portable electric chisel mortiser illustrated, the chisel holder and bit being removable so that the tool can also be used for drilling, either on its stand or hand-held. The tool, known as type CM4, is made by S. Wolf & Co. Ltd., Pioneer Works, Hanger Lane, London, W.5. When used as a chisel mortiser, it will take timber up to 4½ in. square, and cuts mortise slots of any length from ¼ in. to ½ in. wide. The drill unit will drill wood up to ½ in. dia. and steel up to $\frac{5}{16}$ in. dia.

The complete tool, on its small bench stand, weighs 56 lb. The weight of the drill unit is 6½ lb. The motor is of universal pattern for d.c. and single-phase a.c. 25/60 cycles, and is supplied for 50, 100/120, 130, 200/230, and 230/250 volts. The spindle speed running right is 1,350 r.p.m. and 700 r.p.m. on full load.

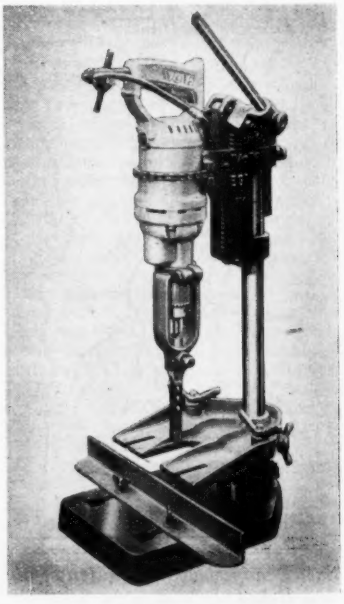
The chisel mortiser is supplied complete with 10 ft. of three-core flexible cable, switch, guide and clamp plates, ½-in. mortise chisel and bit, $\frac{5}{16}$-in. drill chuck, and key. Other sizes of mortise chisel will be supplied on request.

When mortising, a cut is made halfway through the timber, which is then turned over and the through cut finished, the timber having been marked previously for position.

Conversion for Drilling

To convert the unit for drilling, the bit is removed from the chuck, and, by slackening one screw, the mortise chisel and its holder is removed from the machine. The front guide plate is removed and the clamp plate is swung back so that the base of the stand is left clear.

The machine is secured to the stand by means of a chain and wing nut, so is easily removed when required for use as a hand drill. Instructions are supplied with each unit.

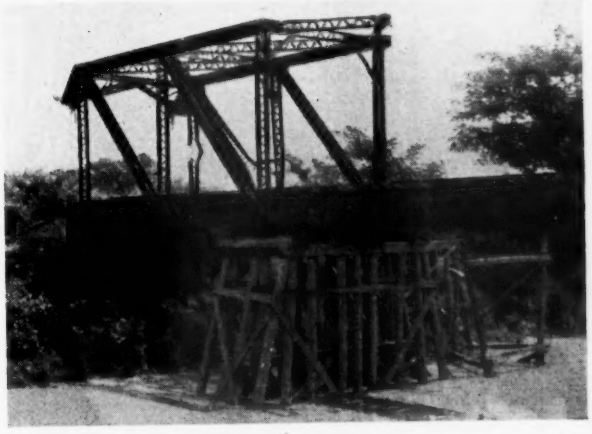


Wolf electric chisel mortiser

Damaged Bridges on the Rangoon-Prome Line

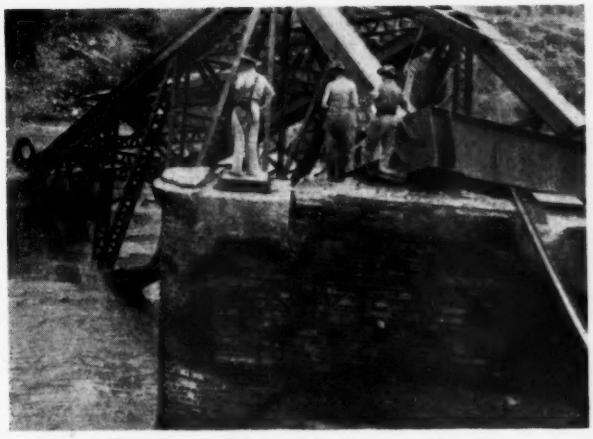
Thonze Bridge No. 182, *consisting of two* 93-*ft. through and two* 40-*ft. spans. One of former lying on its side*

Minhla Bridge No. 273. *Damaged members of* 100-*ft. through span*



Zigon Bridge No. 349. *Remains of through lattice girders replaced by plate girders on pile piers*

Damaged Minhla through span, subsequently slid out and replaced by 100-*ft. Callender-Hamilton span*



Nattalin Bridge No. 379. *Damaged lattice girder span. Since replaced as described in text of article*

Damaged Bridges on the Rangoon-Prome Line

Sinthe Bridge No. 453. Seriously-damaged spans lying on river bed

A vista of contorted steelwork at Sinthe Bridge

Demolished pier and least-damaged Sinthe Bridge span

All that remained of the 120-ft. bowstring swing span at Waw Canal Bridge

Danish Atlantics Rebuilt as Pacifics

A 4-4-2 series built early in the century for express service is being rebuilt as a mixed-traffic 4-6-2

Danish State Railways Pacific rebuilt from an earlier 4-4-2 type

THE Danish State Railways have begun to rebuild 33 4-4-2 compound locomotives of class "P" acquired in 1907-1910. They were designed by the Danish State Railways for express service and are of the 4-4-2 type, with four cylinders (two h.p. and two l.p.), and Walschaert's valve gear. Originally there was no superheater, but this has later been added. Because of this, and the very well-proportioned boiler, the engines have a fuel economy rarely surpassed on express service with few stops. The engine was designed for a maximum speed of 75 m.p.h. with trains not normally exceeding 400 tons.

When it became necessary to handle heavier loads, the Danish State Railways some years ago acquired 11 large Swedish engines, which had become superfluous in Sweden because of the electrification of main lines in that country. These engines, known as class "E," underwent some minor alterations and have since been used both for express work and on heavy goods trains. More of the type were later built in Denmark.

As the fastest traffic in Denmark has been taken over by the diesel-electric *Lyntog* trains, there is no longer scope for the class "P" engines. On secondary main lines, however, an engine more powerful than the present class "K" is required, not only for express and ordinary passenger trains, but to obtain good use also for goods trains. The class "P" engines in their original form have not the necessary adhesion weight for this service, the axle load of 19 tons is too heavy for the secondary lines, and the acceleration is not good enough. As the firebox ends of the boilers are now somewhat worn out after 30-35 years' excellent service, it was decided to rebuild the engines to the 4-6-2 type, thereby reducing the axle load, and at the same time to use a longer and narrower firebox. The four driving wheels of 6 ft. 6 in. dia. are being replaced by 6 wheels of 5 ft. 8 in. dia. This entailed providing a longer frame, which was not an easy job, the old frame being of cast steel rods, while the new part is made of plate iron. An additional dome is provided containing a centrifugal steam drier so that the steam can reach the ordinary dome nearly dry. The effect has been to raise the steam temperature about 90° F.

The following are the main details of the original and rebuilt engines. Two cylinder sizes occur in the original series:—

	Class "P"	Class "PR"
Wheel arrangement ...	4-4-2	4-6-2
Driving wheels, dia. ...	6 ft. 6 in.	5 ft. 8 in.
Cylinders, number ...	4	4
,, dia., h.p. ...	13½ or 14 in.	13½ or 14 in.
,, dia., l.p. ...	22½ or 23½ in.	22½ or 23 in.
Stroke	23½ or 25½ in.	23½ or 25½ in.
Boiler pressure ...	215 lb per sq. in.	185 lb. per sq. in.
Adhesion weight ...	33-38 tons	48 tons
Weight of engine in working order ...	69-70 tons	77·6-78·6 tons
Weight of tender ...	48·4-50·4 tons	52·0 tons
Coal capacity	21-22 tons	23 tons
Water ,, ...	1,100 gal.	1,320 gal.
Total length of engine and tender ...	60 ft. 8½ in.	63 ft. 11½ in.
Maximum axle load ...	19 tons	16 tons

The alterations have been designed and carried out by the Danish State Railways, and the first two rebuilt engines have been running on trial for some time, when they have been found most useful as a mixed traffic type. They have been tested on express trains and reached a speed of 65 m.p.h. with 400 tons behind the tender. In ordinary passenger train service the engines have shown much improved accelerative powers. They have also worked goods trains of up to 840 tons with good results. It is the intention in due course to rebuild the remaining "P" class engines. The rebuilt engines are known as class "PR."

L.N.E.R. Commercial School Opened at Darlington

At the opening of the L.N.E.R. All-line Commercial School, Darlington, on May 7. (Left to right): Mr. T. F. Cameron, Deputy General Manager, Scottish Area; Mr. C. M. Jenkin Jones, Deputy General Manager, North-Eastern Area; Sir Ronald W. Matthews, Chairman, L.N.E.R. (who performed the opening ceremony); Mr. H. F. Sanderson, Principal of the School; Mr. J. Taylor Thompson, Engineer, North-Eastern Area; and Mr. G. Tunbridge, Estate Surveyor, North-Eastern Area. *(See article, page 552)*

"Golden Arrow" All-Plastics Bar Car

The internal decoration and fittings of a converted Pullman vehicle have been carried out entirely in plastic material

Main bar section of the new "Trianon" car

THE "Trianon" bar car now running in the Southern Railway "Golden Arrow" boat train between Victoria and Dover has an all-plastics interior which is believed to represent the first application of these materials to a railway refreshment car. The car was formerly an ordinary Pullman coach and has been stripped to the frame and entirely relined with Warerite laminated plastics. Walls, ceiling, bar, partitions and table tops are all faced with this plastics material in an attractive colour scheme of pink and grey.

Although these laminated plastics have so much to offer from the decorative viewpoint, they are essentially practical materials. They are very strong—they will stand knocks better than cast iron—and are unaffected by moisture, fruit juices or alcohol; and will even tolerate without blemish the effects of a hot teapot being placed on their attractive surface. The materials will not support combustion, and are therefore valuable in reducing the risks of fire. Another feature in their favour for transport purposes is their light weight, which is only half that of aluminium.

The walls in the buffet car are treated in alternate vertical panels of pink and grey Warerite material, sweeping from floor to ceiling. The design thus presents a smooth, uninterrupted surface that is easily cleaned and has no corners to harbour dust and dirt. This same attention to hygiene is noticeable in the treatment of the bar itself, the front of which is concave, so providing a continuous easy-to-clean surface, but at the same time affording plenty of leg room for those seated at the bar. The top of the bar is faced with cream Warerite material incorporating a pencil drawing of an old-time locomotive and coaches in semi-humorous vein. This feature indicates the versatility of laminated plastics. The design has all the appearance of an inlay, but is actually the artist's original drawing incorporated as an integral part of the Warerite sheet. Any artist's drawings, designs, patterns, or even fabrics, can be incorporated in the plastics sheet in this way during manufacture. The same principle is adopted in the representation of the Pullman coat of arms which appears in colour on the main transverse partition.

A low partition divides the bar from a small lounge compartment. Both the partition itself and the compartment are treated with Warerite panels; the table tops in the lounge are also surfaced with the material in red.

This all-plastics car began running in the "Golden Arrow" on May 1, replacing the former "Trianon" bar car illustrated in our April 19 issue.

Lounge section of the "Trianon" car. The panels, partition, and table tops are all of plastic material

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ROAD TRANSPORT EDUCATION.—We have received from the National Standing Joint Committee on Road Transport Education, 15, Savoy Street, London, W.C.2, a poster issued by the Manchester Education Committee giving details of a course which commenced at the High School of Commerce, Manchester, on April 30. Four main subjects are included in the syllabus, namely, road transport operation for passengers, road transport operation for goods traffic, elements of road transport engineering, and road transport accounts and statistics. The course leads to the Royal Society of Arts examination in these subjects, and students may attend classes either morning or afternoon, to suit the requirements of the shift system.

SUPPLY AND SERVICING OF RADAR EQUIPMENT.—The Metropolitan-Vickers Electrical Co. Ltd., and Siemens Brothers & Co. Ltd. announce that an agreement has been concluded between them in connection with the marketing, hire, maintenance and servicing of radar and associated audio-type equipment for marine navigational purposes. The marine radar equipment, which has been designed by the Metropolitan-Vickers Electrical Co. Ltd. to the recently-issued Government performance specification, will continue to be manufactured by that company, whilst the design and manufacture of equipment on the audio side will be undertaken by Siemens Brothers & Co. Ltd. Marketing of both types of equipment on an outright sale basis will be done by both firms, whilst Siemens Brothers & Co. Ltd. will handle hire maintenance and servicing contracts. The reputation and resources of Metropolitan-Vickers in the radar field and the wide experience of Siemens Brothers in telecommunications will thus be combined to give maximum service.

RAILWAY NEWS SECTION

PERSONAL

Lt.-Colonel R. B. Emerson, General Manager, Great Indian Peninsula Railway, has been appointed to succeed Sir Arthur Griffin as Chief Commissioner of Railways, India, when the latter proceeds on leave preparatory to retirement this month.

Khan Bahadur G. Faruque has been appointed to officiate as General Manager of the East Indian Railway.

Mr. E. R. Hondelink, Director-General, E.C.I.T.O., left for New York on May 10 in response to an invitation by the Temporary Transport & Communications Commission of the United Nations to discuss the work of the E.C.I.T.O.

Mr. C. R. Wheeler has relinquished his duties as Controller of Iron & Steel with the Ministry of Supply, and on rejoining Guest Keen Baldwins Iron & Steel Co. Ltd. has been appointed Joint Managing Director.

VULCAN FOUNDRY LIMITED

At the annual general meeting of the Vulcan Foundry Limited, Mr. Walter Woodbine Parish, the Chairman, intimated his intention, during the year, of passing the Chairmanship over to Mr. F. S. Whalley, the present Vice-Chairman & Managing Director, but, if he was re-elected a Director, of remaining on the board. He intimated also that it was proposed that Mr. H. H. Saunders, General Manager, in due course be appointed a Joint Managing Director (see also page 550).

Mr. Gerald Collingwood, T.D., M.I.Mech.E., who was released from the R.E.M.E. with the rank of Colonel in July, 1945, has returned to the Vulcan Foundry Limited as Assistant General Manager. His services have since been lent to Robert Stephenson & Hawthorns Limited (in which the Vulcan Foundry Limited holds an interest) as Managing Director controlling its Darlington and Newcastle Works.

Mr. G. Rigby, O.B.E., G.M., M.I.Loco.E., and Mr. W. L. Topham, O.B.E., M.I.Loco.E., have been appointed Assistants to the General Manager, Vulcan Foundry Limited. Mr. Rigby was Assistant District Locomotive Superintendent, Bescot, L.M.S.R., at the outbreak of war, during which he served with the R.E., attaining the rank of Colonel. He rejoined the L.M.S.R. last November, as Assistant in the Motive Power Office of the Divisional Superintendent of Operation, Manchester, but took up his appointment with the Vulcan Foundry last January. Mr. Topham was in 1940 Assistant Running Superintendent, Buenos Ayres Great Southern and Western Railways. He served during the war with the R.E., including being seconded to the Egyptian State Railways in 1943 as Assistant Chief Mechanical Engineer. He was demobilised in October, 1945, with the rank of Colonel, and took up his appointment with the Vulcan Foundry last February.

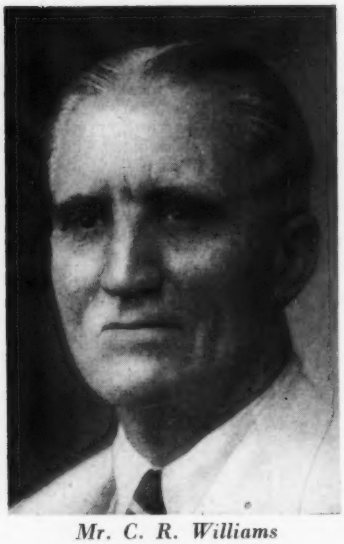
Mr. R. J. M. Inglis, C.I.E., T.D., F.R.S.E., M.Inst.C.E., Divisional General Manager (Scottish Area), L.N.E.R., who, as recorded in our April 26 issue, retired on May 3, joined the North British Railway Engineer's Department as a pupil in 1898, and was taken on the staff in 1900. In 1910 he was appointed Chief Assistant in charge of the New Works Department, and had the supervision of many contracts. In 1911 he was appointed District Engineer, Northern Division, and in 1916 was transferred to the Western Division. In 1919 Mr. Inglis was appointed Deputy Chief Engineer, Railways, at the Ministry of Transport, and, early in 1921, Chief Engineer; at the end of 1921 he returned to his old division of the N.B.R. in Glasgow. In 1929 he was appointed Assistant Engineer (Permanent Way) (Southern Area), L.N.E.R.; in 1931, Assistant Engineer (Construction), and in 1934, Assistant Engineer (Southern Area). In 1936 he was appointed Engineer (Southern Area), and, in 1941, Divisional General Manager (Scottish Area). In 1910 Mr. Inglis had taken command of the R.E. unit of the Edinburgh University O.T.C. He volunteered for service at the outbreak of war in 1914, and was appointed Adjutant to the first training camp for officers at Barry under Lord Kitchener's scheme. In October, 1914, he applied for service abroad, but was recalled to his railway duties. During the recent war Mr. Inglis undertook important Government services overseas. In 1943, at the request of the Government, he was released by his company for important work in India to advise the Railway Administration. On his return in 1944 the Secretary of State for India expressed his great appreciation of the service rendered and in the King's Birthday Honours, 1944, Mr. Inglis was made a C.I.E. In August, 1944, the Government again asked for his services, this time to organise and take charge of all forms of transport in the British Zone in Germany. He is now Chief of the Transport Division with headquarters in Berlin. The great improvement in transport in Germany to-day is a tribute to his organising ability, initiative and energy. Until last year Mr. Inglis was a Member of Council of the Institution of Civil Engineers.

Mr. R. J. M. Inglis
Divisional General Manager (Scottish Area), L.N.E.R., 1941-46

We regret to record the death on May 4 of Mr. Edmund Charles Hill Condon, who was Engineer-in-Chief, Bombay, Baroda & Central India Railway, 1929-30.

Mr. C. R. Williams, C.B.E., General Manager of the Sudan Railways, who, as recorded in our February 15 issue, is retiring, was educated at Wellington College, and at New College, Oxford, where he obtained honours in Engineering Science. He received his locomotive training at Brighton Works, L.B.S.C.R. In March, 1923, he was appointed District Locomotive Superintendent, Kosti, Sudan Railways, and two months later he became District Locomotive Superintendent, Khartoum. He was appointed Assistant Mechanical Engineer, Outdoor, in 1924; Locomotive Running Superintendent in 1927; Works Manager in 1932; and Assistant Chief Mechanical Engineer in 1936. Mr. Williams became Deputy General Manager in July, 1939, and in October, 1941, he was appointed General Manager, and became a member of H.E. the Governor-General's Council.

Monsieur Maurice Lemaire, who, as recorded in our March 29 issue, has been appointed General Manager, French National Railways, was born in 1895 at Gerbepal (Vosges). Monsieur Lemaire, having passed through the Ecole Polytechnique and served as an artillery officer in the 1914-18 war, joined the former Nord system in 1921, in the Permanent Way Department. Subsequently Monsieur Lemaire was appointed Divisional Engineer at Valenciennes, from which post he was transferred to the State Railways to deal with the application of the new measured shovel packing process. Thanks to the adoption of new methods, the outcome of his investigations, the maintenance and renewal of the tracks of the National Railways system is now carried out under improved conditions of speed and effort. In 1937 Monsieur Lemaire was transferred to the Alsace-Lorraine system as Assistant Permanent Way Engineer, and when the French National Railways were formed he became Engineer-in-Chief of the Department at headquarters. In 1939 he was appointed Deputy Manager at

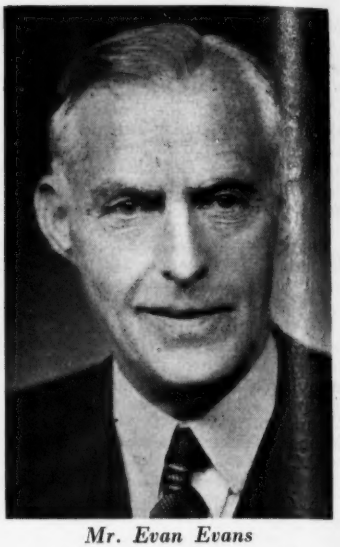


Mr. C. R. Williams

General Manager, Sudan Railways, 1941-46

Monsieur Maurice Lemaire

Appointed General Manager, French National Railways



Mr. Evan Evans

Operating Manager (Railways), L.P.T.B., 1938-46

Strasbourg, and at the beginning of 1940 to the same post for the whole Eastern Region. In May, 1940, he was sent on an emergency mission to Flanders to assume control of that part of the railway system isolated by the enemy's advance. After fighting ceased he returned to Paris and was appointed Chief of the Reconstruction Department, and then, in 1944, General Manager of the Northern Region. On October 10, 1944, he was appointed Assistant General Manager of the whole system. He played a conspicuous part in the reconstruction which within a few months allowed the French railways to give valuable aid to the Allied Armies, and gave back to the country its rail transport.

Mr. Evan Evans, who, as recorded in our April 12 issue, is retiring on July 1 next from the position of Operating Manager (Railways), L.P.T.B., commenced his career as an indentured traffic apprentice in the General Manager's Office, Belfast & Northern Counties Railway. In 1906 he went to the office of Sir George Gibb, then Managing Director of the Underground Electric Railways Co. of London Ltd., and he was appointed Chief Clerk to the Superintendent of the Line, Underground group, in 1910. He subsequently was appointed Assistant Superintendent of the Line. From 1925 to 1928 his services were lent to the Postmaster-General, as Manager of the Post Office tube. He visited Moscow on behalf of the L.P.T.B. in 1932 and again in 1935. When the L.P.T.B. was formed in 1933 Mr. Evans became Indoor Superintendent (Railways). He was appointed General Superintendent (Railways) in 1934, and Operating Manager (Railways) in 1938. In 1936 he visited New York on behalf of the L.P.T.B. Throughout the recent war he was a member of the R.E.C. Operating Committee.

Mr. R. H. Grey, who, as recorded in our April 5 issue, retired on April 27 from the position of Divisional Locomotive Superintendent, Wolverhampton, Great Western Railway, entered the company's service as a premium apprentice at Stafford Road Works in 1896. Thereafter he gained experience in the drawing office at those works, rising to be Chief Draughtsman there in 1905. During the war of 1914-18 he received a commission in the Royal Engineers and saw service in France. In 1919 he was appointed Assistant to the Locomotive Works Manager, Swindon, and he was promoted to be Assistant Works Manager in 1920. Mr. Grey was appointed Assistant to the Locomotive Running Superintendent & Outdoor Assistant to the Chief Mechanical Engineer in January, 1932, and Divisional Locomotive Superintendent, Wolverhampton, on January 2, 1933.

Mr. C. J. Vidal, District Goods & Passenger Manager, Motherwell, L.M.S.R., who, as recorded in our April 12 issue, has been appointed District Operating

Mr. R. H. Grey

Divisional Locomotive Superintendent, Wolverhampton, G.W.R., 1933-46

Mr. C. J. Vidal

Appointed District Operating Manager, Preston, L.M.S.R.

Mr. V. J. H. Webb

Appointed Divisional Locomotive Superintendent, Wolverhampton, G.W.R.

Manager, Preston, joined the L.N.W.R. as a probationer in 1914. He enlisted in the Royal Fusiliers in September, 1914, was commissioned in the Oxfordshire & Buckinghamshire Light Infantry in September, 1915, was wounded in April, 1917, and rejoined the L.N.W.R. and re-commenced training in 1919. He was appointed Assistant District Controller, Patricroft, Manchester, in 1927, and went to Chester in the same capacity in 1928. He subsequently held appointments as Assistant to District Goods & Passenger Manager, Chester (1932); Head of Passenger Revenue Section, Chief Commercial Manager's Office, Euston (1933); District Controller, Chester (1934); and District Controller, Birmingham (1940); before becoming District Goods & Passenger Manager, Motherwell (with both operating and commercial responsibilities) in 1943. The new Preston office, where he is now appointed District Operating Manager, will control the previous Preston and Lancaster district control areas and embrace the main line from Euxton Junction to Penrith, Fylde Coast, including Blackpool and Fleetwood, Keswick and Cockermouth (exclusive), Windermere, Morecambe (Euston Road), and the Ingleton branch. The reorganisation entails decentralisation of staff work and complete autonomy in the district office, for traffic control and staff supervision.

Mr. V. J. H. Webb, Works Manager, Stafford Road Factory, Wolverhampton, Great Western Railway, who, as recorded in our April 5 issue, has been appointed Divisional Locomotive Superintendent, Wolverhampton, entered the company's service in 1900. He served an apprenticeship at Swindon and Wolverhampton, and was transferred to the drawing office at Wolverhampton in 1906. In 1925 he was appointed Second Assistant to the Divisional Locomotive Superintendent at Wolverhampton, and in 1929 became Assistant Divisional Locomotive Superintendent at Wolverhampton. Mr. Webb was appointed Works Manager, Stafford Road Factory, Wolverhampton, in 1939.

Mr. William Lorimer, Chairman of the North British Locomotive Co. Ltd., Glasgow, who, as recorded in our April 19 issue, has resigned on medical advice, in 1897 joined the firm of Dübs & Company, Glasgow Locomotive Works, which had been established in 1864. That company later was merged in the North British Locomotive Co. Ltd., of which Mr. Lorimer became a Managing Director on its formation in 1903, and of the original board of which he is the sole survivor. He has been Chairman of the North British Locomotive Co. Ltd. since 1935. Mr. Lorimer's father, Sir William Lorimer, was the first Chairman of the North British Locomotive Co. Ltd., and Mr. Lorimer's son, Mr. Douglas Lorimer, is the present Managing Director of the company.

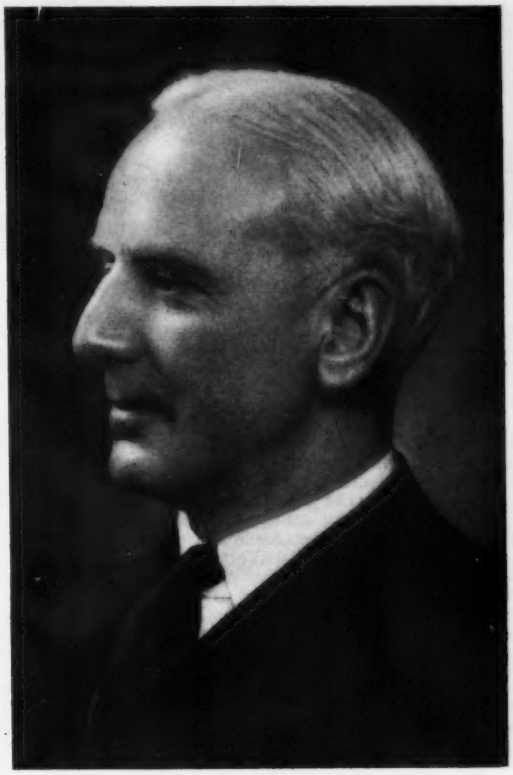
Sir Frederick C. Stewart, D.L., J.P., who, as recorded in our April 19 issue, has been appointed Chairman of the North British Locomotive Co. Ltd., Glasgow, has been a member of the board of that company since 1944. He is Chairman of Thermotank Limited, Thermotank Engineering Co. Ltd., and Thermotank (S.A.) (Pty.) Ltd., and President of Thermotank (Canada) Limited, all of which companies were founded by him with his brothers, the late Mr. A. W. Stewart and the late Mr. W. Maxwell Stewart. Sir Frederick Stewart is also Chairman of Kelvin, Bottomley & Baird Limited, and a Director of many other companies, including William Baird & Co. Ltd., Clydesdale Bank Limited, Brown Bros. & Co. Ltd., and Scottish Industrial Estates Limited. He was Consulting Ventilating Engineer to the Ministry of War Transport, London, for all ships carrying British and American troops during the war. Sir Frederick Stewart is having the honorary degree of LL.D. conferred on him at the Glasgow University Graduation Ceremony in June.

Mr. R. H. N. Bryant, A.M.I.Mech.E., Progress Organiser, Locomotive Works, Swindon, Great Western Railway, who, as recorded in our April 5 issue, has been appointed Works Manager, Stafford Road Factory, Wolverhampton, joined the company in 1927 as a premium apprentice in the Locomotive Works, Swindon. He was appointed draughtsman in the Electrical Section, London Division, in 1934, and returned to Swindon C.M.E. drawing office in 1939. Mr. Bryant was commissioned in February, 1940, and served with 199 and 155 Railway Workshop Companies, R.E., with the B.E.F. He returned to the G.W.R. in August, 1940, on class "W" reserve. His services were lent to the Locomotive Works Manager, Swindon, and he was appointed Progress Organiser in July, 1942. He returned to the Forces in July, 1943, and saw service as a Captain in France, Belgium, and Holland, and was in charge of the construction and man-

Photo] [Lafayette

Mr. William Lorimer

Chairman, North British Locomotive Co. Ltd., 1935-46



Sir Frederick Stewart

Appointed Chairman, North British Locomotive Co. Ltd.

Mr. R. H. N. Bryant

Appointed Works Manager, Stafford Road Factory, Wolverhampton, G.W.R.

Mr. Alfred Jones

Appointed Assistant to Chief Commercial Manager (Passenger), L.M.S.R.

Mr. L. C. Purkess

Appointed Assistant (Passenger Rates & Fares), Chief Commercial Manager's Office, L.M.S.R.

agement of the Royal Engineers (Transportation) locomotive repair shops at Malines, Belgium. Mr. Bryant returned to the G.W.R. at Swindon in November, 1945, under class "B" demobilisation.

Mr. Alfred Jones, Assistant (Passenger Rates & Fares), Chief Commercial Manager's Office, Watford H.Q., L.M.S.R., who, as recorded in our April 12 issue, has been appointed Assistant to Chief Commercial Manager (Passenger), Watford H.Q., joined the Lancashire & Yorkshire Railway in the District Passenger Superintendent's Office, Manchester, in 1911. After five years he was transferred to the Office of the Superintendent of the Line. Mr. Jones later was successively in the General Superintendent's and Divisional Superintendent's Offices at Manchester. In May, 1931, he took charge of the Shunting Analysis Committee for the Central Division, and in December of that year was promoted to be Assistant District Controller, Wakefield. He was transferred to the Chief Commercial Manager's Office at Euston in 1934, and was engaged on special duties, principally in connection with the London Passenger Transport Pooling Scheme, until August, 1936, when he was appointed Deputy Chief Passenger Rates & Fares Clerk. Two years later he was made Chief Passenger Rates & Fares Clerk, and in September, 1944, was appointed Assistant (Passenger Rates & Fares)), Chief Commercial Manager's Office.

Mr. L. C. Purkess, Deputy Chief Passenger Rates & Charges Clerk, Chief Commercial Manager's Office, Watford H.Q., L.M.S.R., who, as recorded in our April 12 issue, has been appointed Assistant (Passenger Rates & Fares), Chief Commercial Manager's Office, Watford H.Q., was educated at Central Foundation School, London, and joined the L.N.W.R. in 1914. After station experience he entered the District Superintendent's Office, Euston, in 1918, and was transferred to the General Superintendent's Office, Euston, in 1922. He went to the General Superintendent's Office (Passenger Commercial), Derby, in 1925, but returned to London four years later with the Road Transport Section of that department, where he was engaged in co-ordination of rail and road transport work and later in traffic court work in connection with passenger and goods road licences. He was appointed Deputy Chief Passenger Rates & Charges Clerk, Chief Commercial Manager's Office, in January, 1939, and was Chairman of the Passenger Train Rates & Fares Conference for 1944. He recently has been engaged on special duties in connection with the R.E.C. Passenger Committee.

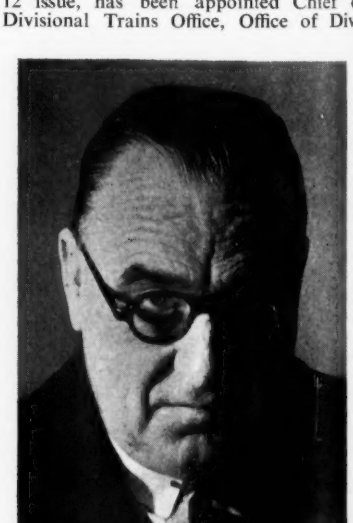
Mr. S. O. Screen, Chief of Divisional Trains Office, Office of Divisional Superintendent of Operation, Manchester, L.M.S.R., who, as recorded in our April 12 issue, has been appointed Chief of Divisional Trains Office, Office of Divi-

Mr. S. O. Screen

Appointed Chief of Divisional Trains Office, Crewe, L.M.S.R.

Mr. R. S. Griffiths

Formerly Sales Engineer (Signals), Westinghouse Brake & Signal Co. Ltd., who has retired



Mr. J. A. C. Picknell

Appointed Assistant (Freight Services), Chief Operating Manager's Office, L.M.S.R.

sional Superintendent of Operation, Crewe, joined the Midland Railway in 1914. He served with the Sherwood Foresters from July, 1918, to April, 1920, when he resumed railway service in the General Superintendent's Office, Derby. In 1923 he was appointed to the personal staff of the Chief General Superintendent, Derby, L.M.S.R. He transferred to the Chief Operating Manager's Office, Euston, in 1934. He became Head of Engine Working, etc., Section, Chief Operating Manager's Office, in 1936, and from 1938 was given added responsibilities in connection with emergency operating arrangements on an outbreak of war. In November, 1939, he entered the R.E. and joined the Movements Directorate, War Office, as a Major. In 1940, he was promoted Lt.-Colonel, in charge of the Q (M) 5 Branch, War Office; was promoted Colonel in 1942; and in 1943, was appointed Deputy-Director of Freight Movement (Home). He was demobilised in July, 1945, and in August became Chief of Divisional Trains Office, Manchester, L.M.S.R.

Mr. Ralph S. Griffiths, A.M.I.Mech.E., M.I.R.S.E., M.Inst.T., as recorded in our May 3 issue, has retired from the service of the Westinghouse Brake & Signal Co. Ltd., after 54 years with that company and its incorporated firm of McKenzie & Holland Limited. His father, Mr. William Griffiths, joined McKenzie, Clunes & Holland at its inception in 1862, and remained with it, after its formation into a limited-liability company, as a Director until his retirement. Mr. Ralph S. Griffiths joined McKenzie & Holland Limited in 1892. After several years as its Southern Area Representative, he was appointed its Assistant Manager in 1914. On the absorption of that company by the Westinghouse Brake & Signal Co. Ltd., he was appointed Sales Engineer (Signals). Early in 1942 he inaugurated that company's library, and he acted as librarian until his retirement. During his career he has been actively concerned with many large installations. Mr. Griffiths is a Past-President of the Institution of Railway Signal Engineers, for his paper before which, "The Double Wire System of Mechanical Signalling," he was awarded the first prize for the session 1925. He is a Fellow of the Permanent Way Institution. For many years he was a lecturer at the City & Guilds College on Railway Signalling.

Mr. J. A. C. Picknell, M.B.E., District Controller, Willesden, L.M.S.R., who, as recorded in our April 12 issue, has been appointed Assistant (Freight Services), Chief Operating Manager's Office, Watford H.Q., joined the L.N.W.R. at Broad Street in 1904. After service in the office of the Superintendent of the Line, Euston, from 1908, he served with H.M. Forces in the Middle East from 1916-19. In 1922, on the amalgamation of the L.N.W.R. and L.Y.R., he transferred to Manchester, dealing with freight train services, and in 1924 went to Derby, where he dealt with freight services on the L.M.S.R. Mr. Picknell was appointed Assistant District Controller, Willesden, in 1926; District Controller, Rugby, in 1929; and District Controller, Willesden, in 1930. In 1940 he was seconded to the Mines Department (afterwards Ministry of Fuel & Power) as Railway Transport Liaison Officer, for his services in which capacity he was made an M.B.E. In 1945 he returned to his position as District Controller, Willesden. Mr. Picknell has served on co-ordination of working, routing and other committees appertaining to freight train working.

Memorial Service for Sir Murrough Wilson

A memorial service for Lt.-Colonel Sir Murrough Wilson, Deputy-Chairman of the London & North Eastern Railway Company, was held on May 10 at St. Botolph's, Bishopsgate, London. Those present included:—

Sir Ronald Matthews (Chairman), the Hon. G. C. Gibbs, the Hon. E. B. Butler-Henderson, and Lord Burghley (Directors), Sir Charles Newton (Chief General Manager), Mr. W. H. Johnson (Secretary), Mr. E. A. W. Dickson (Assistant Secretary), Mr. V. M. Barrington-Ward (Divisional General Manager, Southern Area), Mr. A. E. H. Brown (Assistant Divisional General Manager, Southern Area), Mr. Miles Beevor (Chief Legal Adviser & Solicitor), with other senior officials and members of the staff of the L.N.E.R.: Sir William Wood (President, L.M.S.R.); Lord Ashfield (Chairman, L.P.T.B.); Mr. C. Grantham Page (Secretary & Chief Legal Adviser, L.P.T.B.).

We regret to record the death on May 14, at the age of 63, of Mr. M. W. Wilson, a Director, and member of the executive committee, of the Canadian Pacific Railway Company.

L.M.S.R. Staff Changes

Mr. H. L. Douglas, Assistant to District Engineer, Northampton, to be Assistant to District Engineer, Glasgow (Central).

Mr. W. H. Sibley, Chief Draughtsman, District Engineer's Office, Northampton, to be Assistant to District Engineer, Northampton.

Mr. J. E. Wood, District Locomotive Superintendent, Kentish Town, to be District Locomotive Superintendent, Leeds, in place of Mr. A. W. F. Rogerson, retiring.

Mr. N. R. Peach, District Locomotive Superintendent, Plaistow, succeeding Mr. J. E. Wood as District Locomotive Superintendent, Kentish Town.

Mr. D. D. Scott, Assistant District Locomotive Superintendent, Leeds, to be District Locomotive Superintendent, Plaistow.

We regret to record the death on May 7 of Mr. Harold William Firth, M.Inst.C.E., who was Chief Electrical Engineer, Great Eastern Railway, 1907-22, and afterwards Electrical Engineer, Great Eastern Section, L.N.E.R. He retired in 1924. Mr. Firth was directly responsible to the General Manager for all electrical working on the railway, including the telegraphs, electrical signalling, and electrical equipment and wireless on the company's steamers. He developed the important electrical high-tension power station at Stratford and was an authority on railway electrical practice generally.

Southern Railway Appointment

Mr. F. T. Muncey to be Rolling Stock Assistant (Maintenance), London Bridge, Chief Electrical Engineer's Department.

Mr. Dennis H. Handover has been appointed the Director for the United Kingdom & Eire of Swedish Air Lines (A.B.A. and S.I.L.A.), from June 1. Mr. Handover, who has been Air Adviser to the British railways since January, 1944, as recorded in our last week's issue, is being released at his request on May 30 next.

We regret to record the death, on May 8, of Mr. F. V. Milton, former Editor of the *Southern Railway Magazine*. Mr. Milton, who was Superintendent of Advertising of the Southern Railway in the Public Relations & Advertising Office, was also Editor of the Southern Railway official guide book, "Hints for Holidays." He retired in 1938.

L.P.T.B. Dinner to Paris Metro Delegates

Head officials of the London Passenger Transport Board entertained six visiting officials from the Paris Metropolitan Railway to dinner at the Savoy Hotel, London, on May 8 (see illustration below). Among the L.P.T.B. officials present were: Mr. J. H. Brebner, Chief Public Relations & Publicity Officer; Mr. P. Croom-Johnson, Chief Engineer; Mr. W. S. Graff-Baker, Chief Mechanical Engineer (Railways); Mr. L. C. Hawkins, Comptroller; Mr. G. F. Sinclair, Deputy General Manager (Road Services); and Mr. A. B. B. Valentine, Chief Commercial Officer.

Paris Metro Visitors to L.P.T.B.

Left to right: M. Bardout, Inspector-General of Works (Seine Prefecture); Mr. G. F. Sinclair, Deputy General Manager (Road Services), L.P.T.B.; M. Brigaud, Inspector-General, Paris Metropolitan Railway; M. Lapebie, Engineer-in-Chief, Bridges & Roads, Seine; M. Rouillerat, Inspector-General of Works (Seine Prefecture); M. Ricroch, Manager, and M. Langevin, Director-General, Paris Metropolitan Railway; Mr. J. H. Brebner, Chief Public Relations & Publicity Officer, L.P.T.B.

Meeting Post-War Air Competition in the U.S.A.

New diesel streamline services and cuts in time of 12 to 14½ hr. in schedules between Chicago and the Pacific Coast

Some of the most remarkable timetable improvements ever carried out in one single change in the United States are announced as effective from June 2. It has long been evident that drastic post-war cuts would be necessary in the schedules of long-distance trains in many directions, as soon as post-war conditions permitted, if the railways were to hold their own against the strong competition of air transport; moreover, the variety of independently-owned railway routes available is in itself sufficient to stir up considerable rivalry between the railways themselves. A preliminary to the accelerations, from March 31, as mentioned in an editorial article in this issue, was the institution of the first through daily sleeping car services on record between New York, Philadelphia, Washington, and other cities on the eastern seaboard, and the Pacific coast cities of Los Angeles and San Francisco; previously it has always been necessary to change trains and stations in Chicago or to make a change of train at St. Louis. Since then revolutionary accelerations have been announced between Chicago and the Pacific coast.

The distance from Chicago to Los Angeles is 2,299 miles by the joint Chicago & North Western and Union Pacific route and 2,228 miles by the Atchison, Topeka & Santa Fe; from Chicago to San Francisco by the North-Western-Union Pacific-Southern Pacific is 2,272 miles. Roughly half the journey in each case is on the level or easy grades; the remainder is through the mountain ranges which fringe the western seaboard, and over summit levels which on the Santa Fe exceed 7,000 ft. at three different points, with very severe gradient conditions. Hitherto the fastest trains have been the streamline "City" flyers of the C.N.W.-U.P.-S.P. route, and the all-Pullman "Super-Chief" and all-coach "El Capitan" of the Santa Fe, temporarily decelerated from 39¾ to 41¼ hr. during the war, and now restored to the 39¾ hr. timings, involving overall speeds, including stops and the mountain sections, of 56 to 57.2 m.p.h. Hitherto these trains have all operated twice weekly in each direction, and two sets of stock have therefore been sufficient to maintain each service. In the autumn, however, the "Super-Chief" and "El Capitan" will begin to run daily, and there is little doubt that the "City of Los Angeles" and "City of San Francisco" services of the rival route will follow suit.

Each of these companies or groups also has a number of through trains composed of standard stock, and timed at lower speeds, that work over the same routes; and it is the latter which are being subjected to the drastic acceleration mentioned. Most of these trains have spent three nights and the two intervening days on the run from Chicago to the coast; one night is now being cut out, and journeys which previously took from 60 to 63 hr. are being slashed at one stroke to an average time of 49¼ hr. westbound and 48¼ to 48½ hr. eastbound, that is, by between 12 and 14½ hr. The trains concerned are the C.N.W.-U.P. "Los Angeles Limited" between Chicago and Los Angeles, and the C.N.W.-U.P.-S.P. "Overland Limited" between Chicago and San Francisco; the C.N.W.-U.P. "Portland Rose" between Chicago and Portland, the Rock Island and Pacific has been drawn into the same competition, and in conjunction with the Southern Pacific the through "Golden State Limited" is accelerated to a time of 49¼ hr westbound and 48¼ hr. eastbound over a route 2,340 miles in length. Moreover, the Rock Island has ordered equipment to introduce a diesel-hauled streamline train, in conjunction with the Southern Pacific, over the "Golden State" route between Chicago and Los Angeles, in the same 39¾ hr. time as its competitors, involving an overall average speed of 58.9 m.p.h. Further trains on each of these routes are being accelerated by many hours, and the Southern Pacific is accelerating its "Sunset Limited" between Los Angeles and New Orleans in similar fashion.

A number of new streamline trains, with diesel power, is now under construction, and among them a set of trains to replace the present "Exposition Flyer" of the Chicago, Burlington & Quincy, Denver & Rio Grande Western, and Western Pacific Railroads between Chicago and San Francisco. This train, to be called the "California Zephyr," will run to greatly accelerated times. Of all the competing routes this is the most mountainous, going as it does over an altitude of 9,200 ft. in the Moffat tunnel, but at the same time it has the greatest scenic attraction of any. Another change from steam haulage to diesel streamliner in which the Burlington is interested is that of the Great Northern Railway's "Empire Builder," worked through over Burlington metals between Chicago and Minneapolis; for this service new trains are now being built, which for the first time will give daily streamline service between Chicago and Seattle and other cities of the north-west Pacific coast area, reducing the journey time from 58¼ to 45 hr. from Chicago to Seattle. This move, in its turn, has stirred up strong competition north-westwards from Chicago. The Chicago, Milwaukee, St. Paul & Pacific Railroad has placed orders which will enable it to transform the "Olympian" between Chicago and Seattle into a diesel-hauled streamliner. What such a change means, over a route 2,189 miles in length, may be understood when it is stated that it involves the building of six new 12-car trains, with the necessary diesel power. The streamlined "Olympian" will enter service early in 1947.

In other directions equally notable developments are taking place, and streamline trains with diesel power are being built in considerable numbers, both to replace existing services and to provide entirely new high-speed service in all directions across the United States. Among the latest announcements is that of a new "Aztec Eagle," which will be operated jointly by the Missouri Pacific and National of Mexico between St. Louis and Mexico City, on a 45½-hr. schedule, 18¼ hr. less than the existing best. This will run between St. Louis and San Antonio as part of the Missouri Pacific "Sunshine Eagle," the diesel streamline version of the previous "Sunshine Special," which is now under construction. Among competitors for the traffic between the Middle West and the Gulf Coast cities is the Santa Fe, which is extending its southbound "Kansas Cityan" and northbound "Chicagoan" diesel streamline trains, at present operating between Chicago and Oklahoma City, to Fort Worth, Dallas, Houston, and Galveston. The "Ranger," another train over the same route, will also become a diesel streamliner, and morning and evening high-speed departures will be provided in this way from Chicago to north Texas cities in about 19 hr. and those of south Texas in about 25 hr.

Elsewhere the highest speeds of peacetime have been restored, and over many lines, such as those of the Baltimore & Ohio, for example, they have been bettered. Once again the "Twentieth Century Limited" of the New York Central and the "Broadway Limited" of the Pennsylvania are running on their 16-hr. schedules between New York and Chicago, and there are more 17 hr. trains now in operation over the two routes than ever previously. Two notable speed restorations are those of the competing "Denver Zephyr" of the Burlington and the "City of Denver" of the Chicago & North Western and Union Pacific between Chicago and the capital of Colorado; the routes are 1,037 and 1,048 miles in length, and the times 16 hr. westbound and 15 hr. 35 min. eastbound. The latter time is even faster than before the war, and involves an inclusive speed of 66.7 m.p.h. by the Burlington and no less than 67.3 m.p.h. by the other two companies, over the entire distance daily.

A high-speed service involving Denver, and in competition with the "Colorado Eagle" of the Missouri Pacific, is to be instituted jointly by the Wabash—a new entrant to the diesel streamliner field—and the Union Pacific, between St. Louis, Kansas City, Denver, and Cheyenne, where connection will be made with Union Pacific services to the Pacific coast. As compared with the existing schedule of the "Pacific Coast Limited," the new "City of St. Louis" will make the westbound journey of 918 miles between St. Louis and Denver, Colorado, in 16¼ hr., 8¼ hr. less than now, and will return in 15 hr. 55 min., a cut of over 6½ hr. Many other developments are in course of planning or active preparation, and it is clear that in the United States the years 1946 and 1947 will witness some most outstanding railway passenger developments.

L.N.E.R. Loudspeaker

A system of communication by Loudaphone between the booking office and the platform is being installed at Sunderland Station, L.N.E.R., to enable the clerks to advise the platform staff of last-minute passengers, and conversely, the platform staff to advise the booking office whether a train has left. A similar installation at Leicester (to which brief reference was made in our February 2, 1945, issue) has been found a very convenient method of communication between points separated by considerable distance. It enables the staff to converse freely without the aid of telephones. When the platform staff advises the booking clerk of a train position, he presses a "speak" switch and speaks into a microphone which greatly amplifies his voice and yet eliminates surrounding "unwanted" noises. The booking office staff immediately hears his announcement without moving position, and similar working applies in the reverse direction; or two-way conversations can take place. The system differs from the ordinary loudspeaker installation, as it is primarily to enable conversations to be carried on privately between the company's staff, as against the public address system of the loudspeakers which announce the departure of trains and other messages intended for passengers. A new installation of the latter type recently was brought into use at Hull (Paragon) Station.

Canadian Pacific Railway Company

The annual general meeting of the Canadian Pacific Railway Company was held in Montreal on May 1, Mr. D. C. Coleman, LL.D., D.C.L., Chairman & President of the company, presiding.

The Chairman, in moving the adoption of the report and accounts, said that the first peacetime meeting following six years of war provided a fitting occasion for expressing their thanksgiving that final and complete victory was won over those powers bent on world domination and enslavement. Behind all the accomplishments in production was the co-ordinating factor — rail transportation — effectively serving and continuously on the job. The railways played a vital role in the great task of weaving together the diversified strands of activity which made up the fabric of the national war effort.

For the fifth consecutive year there had been a decrease in the ratio of net earnings to gross earnings. It was clear that only the abnormal volume of traffic made it possible for the company to meet the rising costs of operation and to show fairly satisfactory results. It was also clear that the existing narrow margin between earning and expenses left them extremely vulnerable to a downward trend in traffic volume. At the conclusion of the first world war, working expenses were taking 78 cents of every railway dollar earned, leaving 22 cents for fixed charges, dividends and improvements to plant. Now, despite the maintenance of a high standard of operating efficiency and equipment, working costs had so increased that out of each dollar only 11 cents were left after meeting working expenses. They were paying out from 25 per cent. to 35 per cent. more for wages and materials, while on the other hand their rates for services had been on the decline for the last 25 years. Little imagination was required to appreciate the difficulties and uncertainties which arose from such an unfavourable situation.

For their company 1945 was a peak year in service rendered, train-miles, car-miles and gross ton-miles being the highest ever. No excuse need be offered for drawing attention to the fact that these records in service rendered were established in a period which presented the management with most perplexing problems. Foremost among these were high labour turnover and shortages of manpower, equipment and materials.

Dividends on ordinary stock amounting to $1.25 per share were declared, the same as for 1944. After a lapse of 12 years, dividend payments on the ordinary stock were resumed in 1943 and since that time $40,200,000 had been paid to some 60,000 holders of ordinary shares. Profits of the company paid to the Dominion Government as taxes throughout the war years had been two and a half times this amount, and in addition the dividends paid were subject to tax as income of individuals who received them.

The first quarter of 1946 had been marked by a falling off in traffic volume, and they might expect this trend to continue. However, in view of the eager market in the country for practically all types of consumer goods, the spur to agricultural production in the demands for export as well as domestic consumption, the urgent need for housing accommodation, and the pent up demand for new construction of many kinds, he did not anticipate the calls upon Canadian railway services in the immediate future would be drastically reduced.

He could not be too emphatic in stressing the serious concern which was felt with regard to the outlook for working expenses and consequently for net earnings. Railway costs had been on the rise since the beginning of the war, and the pressure on wage and price levels continued without abatement. Current requests for wage and rule revisions involving substantial additional expenses had been presented to Canadian railways by certain groups of employees. The railways had declined the requests in these cases, and the employees concerned had referred the matter to the National War Labour Board. One case had been heard by the Board, but no decision yet made.

The situation with regard to material costs was ominous. They were large users of many types of materials, particularly steel, coal and lumber. Ceiling prices for steel and lumber were recently again increased, while a higher coal price was also in sight. Further increases in operating costs therefore appeared inevitable. Moreover, economies attendant on maximum car and train loads to which they had been accustomed in recent years would disappear as traffic volume declined. Taking everything into consideration, it must be conceded that the relationship between railway earnings and expenses was now at a critical stage.

Believing that the future must be approached aggressively as well as hopefully, the directors were today asking approval of capital expenditures totalling $42 million, of which the details were set out in the annual report. These expenditures had all been carefully planned with a view to betterment of their properties and their rehabilitation after the wear and the losses borne under wartime operations. The railway appropriations covered practically every type of work and would be spread over the whole system, with every section of the country benefiting not only from the ultimate improvement in service, but directly and immediately through sustained employment of railway workers and of those engaged in supplying the necessary materials. It did not depend on their company alone whether it would be permitted to fulfil its tasks; it depended also on realistic public appreciation of the present need of the railways to have charges for their services increased commensurately with their operating costs, and on the adoption of an enlightened long-term transport policy in which first things were placed first.

The report and accounts were adopted.

Vulcan Foundry Limited

The annual general meeting of the Vulcan Foundry Limited was held at 20, Moorgate, London, E.C., on May 3, Mr. Walter Woodbine Parish, Chairman of the company, presiding.

A letter to shareholders from the Chairman was attached to the report and accounts. The letter said that the year to December 31, 1945, covered a transition period during which the company had been engaged almost entirely on the manufacture of locomotives, a period during which a shortage of labour and delayed delivery of raw materials had led to many hold-ups and difficulties in maintaining an even flow of production.

The year 1945 had seen the fruition of the design and starting of the manufacture of the "Liberation" locomotives specially produced by the company for operating in Europe to meet the needs of the war-ravaged countries. The design had been worked out under the orders of U.N.R.R.A. in conjunction with the members of the Technical Advisory Committee on Inland Transport of the British and Allied Governments in London. In 1943, when the rehabilitation of Europe was already under consideration, the industry was asked by the Ministry of Supply to prepare designs of a locomotive suitable for universal use on the railways of Europe. This work was entrusted to their company, and the preliminary drawings and specifications were prepared and submitted to the Technical Advisory Committee. Final plans were agreed in an harmonious spirit, and the preparation of manufacturing drawings was put in hand late in 1944.

At present there were 110 of these locomotives under construction for distribution by U.N.R.R.A. in Poland, Czechoslovakia and Jugoslavia, and a further 10 for the Duchy of Luxembourg. The first locomotive was not actually turned out until March, 1946, but very substantial progress in machining was made before that date.

The locomotive had received general commendation from the critics, and the Chairman hoped at the next annual general meeting it would be possible to report that its performances in service had been equally appreciated, and that it would carry out the high reputation of British design and workmanship on the Continent.

In moving the adoption of the report and accounts at the annual general meeting the Chairman said that the results of the past financial year were once again governed to a great extent by taxation, and so far as their company was concerned, by taxation which was a reflex of conditions ruling in the lean years prior to 1936. He calculated that of the profit and loss balances for the seven years 1939 to 1945 inclusive, of £1,132,000, no less than, say, £816,000, or 72 per cent., was required to meet taxation, leaving £316,000 to meet the preference and ordinary dividends and reserves, which was equivalent to an average rather less than 5 per cent. on the capital of the company.

During the coming year there would be some alleviation of the amount to be set aside for taxation, and, too, a credit, but subject to income tax, would fall due as a result of a 20 per cent. refund of the total amount paid in E.P.T., but there would still be a 60 per cent. charge on the current year's earnings in respect of this wartime tax. This 20 per cent. refund, however, would be required for development—that is, new tools, and could not fall to the shareholders.

There was a great leeway to make up in regard to locomotive requirements, at home, throughout the Empire, in the war-stricken countries of Europe, and in certain other markets overseas; a share in this would provide their company with work for some time ahead, but that was not all.

The development of the diesel engine had opened up a new chapter in the locomotive industry: how far steam would remain the motive power of the future, time alone would tell, but their company was fully alive to the possibilities which lay ahead, and the inevitable developments which must be expected.

The Chairman had referred in his letter

(*Continued on page* 552)

to shareholders to a resolution that the maximum number of Directors be increased from six to eight. Under the company's articles of association a Managing Director, before he could be appointed to such a post, must be a member of the Board. At the moment Mr. Whalley was the sole Managing Director; the work of their company, however, during recent years had broadened very considerably, and in his opinion, and that of his colleagues, it would be to the advantage of their executive if a Joint Managing Director be appointed. It was therefore proposed that Mr. Saunders, who was at present General Manager, should, in due course, be appointed a Joint Managing Director. Further, it was obviously necessary in these days, when new ideas and new methods were under consideration, that there should be a strengthening of the staff with a view to the future. The Board had already made certain appointments to the staff, and they proposed to follow the same course in so far as their Directors were concerned.

During the year, the Chairman continued, it was his intention to pass the chairmanship over to Mr. Whalley, the present Vice-Chairman, but if he was re-elected a Director he would remain on the Board.

The report and accounts were adopted unanimously.

Re-Opening of British Railways' Paris Office

In connection with the inaugural trip of the London-Paris "Golden Arrow" service, the British Railways' Office, 12, Boulevard de la Madeleine, Paris, was officially re-opened on April 16, in the presence of Sir Eustace Missenden (General Manager, Southern Railway), who, supported by officers of the Southern Railway, L.M.S.R., L.N.E.R. and G.W.R., entertained some 150 guests, among whom were His Britannic Majesty's Ambassador, the Rt. Hon. A. Duff Cooper; Monsieur Lemaire, General Manager, and Monsieur Goursat, Honorary General Manager, of the French National Railways; Monsieur le Besnerais, who was General Manager of the French National Railways before the war and is now President of the International Union of Railways; and members of the British Diplomatic Corps and Consulate, the British Chamber of Commerce, the French National Railways, International Union of Railways, tourist agents, and the press.

The British railway officers who were among the party were:—

Southern Railway: Sir Eustace Missenden, General Manager; Mr. O. V. Bulleid, Chief Mechanical Engineer; Mr. C. Grasemann, Public Relations & Advertising Officer; Mr. R. H. Hacker, Continental Superintendent.

Great Western Railway: Major J. Dewar, Publicity Officer; Mr. L. W. Conibear, Commercial Assistant to Superintendent of the Line.

L.M.S.R.: Mr. Albert Evans, Continental Assistant to Chief Commercial Manager.

L.N.E.R.: Mr. L. H. K. Neil, Continental Traffic Manager; Mr. C. G. G. Dandridge, Passenger Manager (Southern Area); Mr. A. J. White, Advertising Manager.

Chemins de fer Britanniques: Mr. A. M. Newbold, General Agent for France: Mr. P. C. Durrant, Assistant General Agent.

L.N.E.R. Commercial School Opened at Darlington

Modern methods of staff training adopted by the L.N.E.R. were carried a stage further on May 7, when Sir Ronald Matthews, Chairman of the company, opened the All-Line Commercial School at Faverdale, Darlington. A similar centre for operating staff has been in use at Grantly, Darlington, since January 13, 1944.

The object of the new school is to provide for senior staff a course in the more advanced aspects of railway commercial work. The school is residential, and the students are selected by the headquarters of the L.N.E.R.; the total of 20 which can be accommodated is drawn from the three areas of the system approximately in proportion to the total staff in the commercial departments of each area. Men returning from the Forces will be included in the nominations, and the company hopes that the course will facilitate the return to railway work of those selected from among them.

Briefly, the course seeks (i) to broaden the students' outlook; (ii) to widen their knowledge of the company's organisation and the special place in it of the Commercial Department; (iii) to give them a better appreciation of public and traders' requirements; and (iv) to promote orderly thinking with special reference to railway commercial practice and the adoption of methods best calculated to meet public and traders' requirements. The course also provides a special opportunity for the observation of any exceptional aptitude of the students. It lasts 4½ weeks, with a break between the second and third weeks when the students may go home on Friday afternoon and return in time to resume on Monday afternoon. One day at the end of the course is devoted to examinations.

From time to time the students visit works in the area, and the L.N.E.R. is appreciative of the co-operation received from the industries concerned.

The school is in one of the company's houses located in attractive surroundings on the outskirts of Darlington. It has been necessary to enlarge the accommodation.

As previously recorded in our columns, the Principal is Mr. H. F. Sanderson, previously District Goods Manager, Newcastle-upon-Tyne.

Staff & Labour Matters

The Business Training Scheme

The Ministry of Labour & National Service has published a pamphlet (P.L. 198) which explains the Government's business training scheme for the information of employers, with particular emphasis on the setting up of specialised courses. The pamphlet is being distributed to employers and employers' associations throughout the country.

Employers, large and small, are being asked to co-operate in carrying out the business training scheme in three ways:—

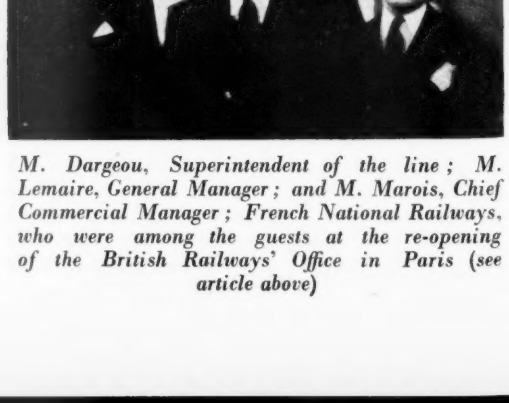
(1) By setting up specialised courses within their firms.

(2) By keeping in touch with the general business courses in their districts and drawing on those taking the courses for a due proportion of the men and women of potential management grade whom they will be wishing to recruit to their businesses.

(3) By encouraging young ex-Service men and women, who appear to be eligible for the scheme and suitable for training at management level, to apply for places in the general

Re-Opening of British Railways' Paris Office

Rt. Hon. A. Duff Cooper, British Ambassador in Paris; Sir Eustace Missenden, General Manager, Southern Railway; Sir Charles Henderson, President of the British Chamber of Commerce in Paris, at the re-opening of the British Railways' Office in Paris



M. Dargeou, Superintendent of the line; M. Lemaire, General Manager; and M. Marois, Chief Commercial Manager; French National Railways, who were among the guests at the re-opening of the British Railways' Office in Paris (see article above)

business course, possibly as a prelude to the provisional offer of a place in the firm after training.

A specialised business course is, in essence, an arrangement by which a man, whose selection has been approved by the firm providing the training, is given a chance to learn the essential groundwork of a particular business from the angle of management, by being "put through the departments" or various aspects of the business, and doing practical work as a trainee (as distinct from being an employee) for a suitable length of time in each. Such a course does not involve the setting up of a special training department in a firm which has not already got one.

So that trainees may qualify for Government assistance while under training each specialised course must be approved as part of the business training scheme by the Ministry. A student will not normally qualify for assistance in taking a specialised course unless he has already taken, or will take, the general business course.

Agricultural Wages

The Central Agricultural Wages Board has recommended an increase in the minimum wage for men from 70s. to 80s. a week, and for women from 50s. to 56s. a week at age 18, and 60s. a week at age 21. Proportionate increases for youths also are recommended.

In accordance with the wage-fixing machinery for the agricultural industry, the proposals will be submitted to the county agricultural wages committees, and the board will meet on June 5 to consider any representations which those committees may make.

Parliamentary Notes

Great Western Railway Bill

The Great Western Railway Bill was read the second time in the House of Lords on May 7.

Questions in Parliament

Railway Catering

Lt.-Colonel E. M. King (Penrhyn & Falmouth—Lab.) on May 8 asked the Minister of Food if he would increase the allocation of food to station buffets and dining cars on trains, where the consumption of food was to some extent a necessity, and make a corresponding reduction in the allocation of food to West End luxury restaurants.

Sir Ben Smith (Minister of Food): Allocations of rationed foods to railway station buffets and dining cars are made on the same scale of allowances as to catering establishments generally, including West End hotels. It is impracticable to draw a fine distinction between the varying degrees of necessity or luxury in different catering establishments.

St. Pancras-Bedford Train Service

Lieutenant T. C. Skeffington-Lodge (Bedford—Lab.) on April 15 asked the Minister of Transport if he was aware that passengers for Bedford had been turned away from the 5.25 p.m. train from St. Pancras, due to arrive at 6.35 p.m. on Friday, March 29, by a notice directing them to assemble for a 5.30 p.m. Bedford only train on another platform; that at 5.56 p.m. loudspeakers had informed several hundred waiting passengers, who had acted on instructions, that the 5.30 p.m. train would not leave till 6.15 p.m. or later, but that passengers could board the 5.58 p.m. train; that three or four hundred persons had forced their way into that already overcrowded train and arrived 29 minutes late at Bedford; and if he would take immediate action to prevent a repetition of that dangerous state of affairs.

Mr. Alfred Barnes, in a written answer, stated: I regret the inconvenience caused to passengers which arose from a failure in the working of some points at Finchley Road. I have sent to Lieutenant Skeffington-Lodge a full report, from which he will see that the circumstances were quite exceptional.

Return Tickets on Green Line Coaches

Mr. Ernest Davies (Enfield—Lab.) on March 25 asked the Minister of Transport if he would re-instate the issue of return tickets on the Green Line routes of the L.P.T.B.

Mr. Alfred Barnes: In restoring the present limited services of Green Line coaches, I decided that, in general, single tickets only should be issued for the present. I shall review the question of issuing return tickets later on.

Mr. Davies: Will the Minister give the reasons for issuing only single tickets, and is he aware of the great inconvenience caused to the workers of this country?

Mr. Barnes: There is more than one reason, but I would ask Mr. Davies to bear in mind that the railway companies are unable at the present moment to operate many of their normal facilities.

Sleeping Car Services

Colonel F. J. Erroll (Altrincham—C.) on May 9 asked the Minister of Transport (1) how many sleeping cars ran in each direction nightly between London and Scotland; and how many ran between London and Manchester; and (2) if, in view of the improved sleeping-car services now being provided on Scottish routes, he would take immediate steps to increase the number of sleeping cars in both directions on the London-Manchester and London-Preston night trains.

Mr. G. R. Strauss (Parliamentary Secretary, Ministry of Transport): On week nights 19 first class, two composite (first and third) and 10 third class sleeping cars are run nightly in each direction between London and Scotland; one first class and one third class car between London and Manchester; and one first class car between London and Preston. Additional sleeping cars could not be provided between London and Manchester without seriously reducing third class seating accommodation on a heavily-loaded train. Between London and Preston the addition of another sleeper would preclude the extra seating accommodation which it is frequently necessary to provide on the train. Overcrowding would result, and for this reason I could not at present justify an increase in the sleeping accommodation provided on these two routes.

Colonel Erroll: While appreciating the difficulties of the situation, may I ask the Parliamentary Secretary if he will make arrangements to run an additional train at midnight? Two trains really are required.

Mr. Strauss: I appreciate the congestion, and I hope to improve the service before long, although it is impossible to do so at the moment.

Sir Wavell Wakefield (Marylebone—C.): Will the Parliamentary Secretary arrange to run another sleeper between Euston and Preston over the weekend?

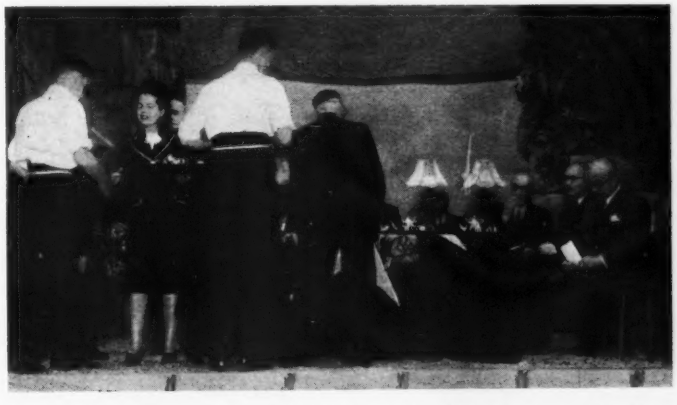
Mr. Strauss: I will consider that point.

Housing of Northern Rhodesia Railway Employees

Mr. A. M. Skeffington (Lewisham West—Lab.) on May 1 asked the Secretary of State for the Colonies if he was aware of the deplorable housing conditions for African employees on the railways in Northern Rhodesia, to which attention had been drawn in the recent report of the commission of inquiry into the railway strike; and what steps were being taken to remedy those conditions.

Mr. George Hall (Secretary of State for the Colonies): I have taken special note of that part of the commission's report relating to housing conditions for African employees, and I am informed by the Governor that immediate steps are being taken to implement the commission's recommendations. The survey by labour officers proposed by the commission is now in progress, and in the meantime representations by the Government to the railway administration on the necessity of taking immediate steps to alleviate conditions have already met with considerable response, despite shortage of materials for construction. Tenders have been invited for new buildings at Ndola and Broken Hill and construction is to begin at once. Extensive alterations are already being carried out to the existing buildings at Livingstone and immediate construction of additional dwellings is in hand.

Southern Railway Ambulance Competition



Mrs. John Elliot, wife of the Deputy General Manager, Southern Railway, presenting the prizes at the first post-war Ambulance Competition of the Company, at the Borough Polytechnic, on April 26.
(See last week's issue, page 524)

Notes and News

Broom & Wade Limited.—An interim dividend of 7½ per cent. has been declared on the ordinary shares, as against 11¼ per cent. last year. The interim payment was raised last year in order to equalise the distribution between old and new shares.

Locomotive Draughtsman Required.—A locomotive draughtsman is required by the Iraqi State Railways for a tour of three years in the first instance. Candidates must have served an apprenticeship in the workshops of a British railway or firm of locomotive builders. For full particulars see Official Notices on page 555.

Vacancies on the Burma State Railways.—Vacancies exist on the Burma State Railways for civil engineers, senior and junior, and mechanical engineers. Candidates should be British subjects aged between 25 and 40 years. Contract is for three years, with salary at flat rate throughout and fixed according to age on appointment. For full particulars of these vacancies see Official Notices appearing on page 555.

Colonial Government Appointment.—An accountant is required by the Gold Coast Government Railway for one tour of 12 to 24 months with possible permanency. Candidates must have a thorough knowledge of book-keeping, with practical experience in railway accounting work and be capable of taking full charge of any section of a railway accounting organisation. For full particulars see Official Notices on page 555.

Transfer of Return Ticket.—On May 8 the Lord Chief Justice, Mr. Justice Humphreys, and Mr. Justice Singleton, at a Divisional Court, reversed a decision of Kent justices at Tonbridge, and held that it was an offence for a husband to travel by train on the unused half of a return ticket bought by his wife, and marked "not transferable." On August 10, 1945, the wife bought a third class monthly return ticket from London Bridge to Paddock Wood, but made the journey by car. She returned to London by train on the return half, transferring the forward half to her husband, who used it for a journey to Paddock Wood on August 16, 1945. The Lord Chief Justice said the offences were clearly made out, although there was not the slightest intention on the part of husband or wife to defraud the company. The case would therefore be remitted to the justices.

Works Superintendent Required for India.—A works superintendent is required for an up-to-date locomotive boiler-building plant now being established at Jamshedpur, Behar, India. Applicants, who should be between 35 and 45 years of age, should have had a sound training and good subsequent experience in locomotive building, including boilers, and should be ready and able to take responsibility. For full details see Official Notices on page 555.

G.W.R. Personnel in Victory Procession.—In connection with the London Victory celebrations, 12 men and two women members of the staff of the Great Western Railway, of all grades and from all parts of the system, will form part of the railway contingent in the victory procession, which will include also a G.W.R. road vehicle.

I.C.I. Expansion Programme.—Imperial Chemical Industries Limited has announced a £9,000,000 scheme for expansion of its dyestuffs interests in Manchester, Huddersfield, and Grangemouth. Of this sum, £8,000,000 will be used for expansion of manufacturing facilities, and £1,000,000 for extending research and development facilities at the I.C.I. Dyestuffs Division headquarters, Blackley, Manchester.

Early Closing of Underground Entrance at London Bridge.—As from May 6, one of the two entrances to the London Transport Northern Line station at London Bridge has been closed at 8 p.m. every evening and at week-ends (after 2 p.m. on Saturdays). The entrance is at the end of the subway to the Southern Railway station. It was put out of service during the war by enemy action, but was rebuilt and re-opened in July, 1945. Since that time the number of passengers using it after the evening rush has been very small.

Southern Railway Suburban Electric Coaches.—The output of new electric passenger coaches required for the Southern Railway suburban traffic is to be increased. Thirty-three four-coach electric units are starting to come into service at the rate of one unit a week; each unit is capable of seating 420 passengers in 35 compartments. These vehicles have been designed

Presentation to Mr. H. W. Newman, L.M.S.R.

Mr. W. K. Wallace, Chief Civil Engineer, L.M.S.R., presenting an antique lantern clock to Mr. H. W. Newman, Steelwork Assistant, on the occasion of his retirement

British and Irish Railway Stocks and Shares

Stocks	Highest 1945	Lowest 1945	Prices May 14, 1946	Prices Rise Fall
G.W.R.				
Cons. Ord.	60⅜	47½	61½	+ 4½
5% Con. Pref. ...	124½	104½	116	+ 3
5% Red. Pref. (1950)	107⅜	101½	103	—
5% Rt. Charge ...	137¼	120	128½	+ 2
5% Cons. Guar. ...	135½	117	125½	+ 2
4% Deb.	118	106	114	+ 2
4½% Deb.	119½	108	114½	+ 2
4½% Deb.	124½	111½	117	—
5% Deb.	138	124	128	—
2½% Deb.	83	74½	85½	—
L.M.S.R.				
Ord.	33	23¼	28¾	+ ¾
4% Pref. (1923)	65	50	59½	+ 1½
4% Pref.	80¾	69½	83½	+ 3½
5% Red. Pref. (1955)	106½	99½	103½	—
4% Guar.	106½	97	106	+ 2
4% Deb.	110½	102	111	+ 2
5% Red. Deb. (1952)	110½	103½	105½	—
L.N.E.R.				
5% Pref. Ord. ...	8½	5½	6	+ ½
Def. Ord.	4½	2½	3	—
4% First Pref. ...	62½	49½	58½	+ 1½
4% Second Pref. ...	33¼	24½	28½	+ ½
5% Red. Pref. (1955)	103	96	99	—
4% First Guar. ...	104½	95	106	+ 3
4% Second Guar. ...	97	89½	98	+ 3
3% Deb.	91⅞	82½	96	+ 1
4% Deb.	109½	101	111	+ 2½
5% Red. Deb. (1947)	103¼	100	100	—
4½% Sinking Fund Red. Deb. ...	106⅜	103	104½	—
SOUTHERN				
Pref. Ord.	79½	63	79½	+ 2
Def. Ord.	27	20⅛	22	+ ½
5% Pref.	124½	104	116	+ 3
5% Red. Pref. (1964)	117	107	109½	+ 1
5% Guar. Pref. ...	135¾	117	125½	+ 3
5% Red. Guar. Pref. (1957)	117	106½	109½	+ 1
4% Deb.	117	104½	113	+ 3
5% Deb.	137	124	128½	—
4% Red. Deb. (1962-67)	112	104½	108½	—
4% Red. Deb. (1970-80)	113½	104	109½	—
FORTH BRIDGE				
4% Deb.	106	103	105	—
4% Guar.	106	101	104	—
L.P.T.B.				
4½ "A"	125	117	124½	+ 1
5% "A"	135	127	133½	—
3% Guar. (1967-72)	100	97½	105	+ 1
5% "B"	125½	115	119½	+ 1
"C"	70	58	59	—
MERSEY				
Ord.	37	31½	30½	—
3% Perp. Pref. ...	72½	68½	72	—
4% Perp. Deb. ...	104½	104	103	—
3% Perp. Deb. ...	84	78½	82½	+ 1½
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	34	24½	38¾	+ 1½
Pref.	52½	42¾	58	— ½
Guar.	80	68	84	—
Deb.	97½	87½	101½	—
IRISH TRANSPORT				
Common	—	—	18⅛	+1/4½
3% Deb.	—	—	102½	+ 1½

* Latest available quotation

OFFICIAL NOTICES

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS.

APPLICATIONS from qualified candidates are invited for the following post:—

ACCOUNTANT required by the Gold Coast Government Railway for one tour of 12 to 24 months with possible permanency. Salary: £400, rising to £720 a year. Commencing salary according to qualifications and experience and war service. On salary of £400 a year a local allowance of £60 is payable and separation allowance for married men of between £84 and £204 a year according to number of dependants. Outfit allowance £60. Free passages and quarters. Candidates, not over 35, must have a thorough knowledge of bookkeeping with practical experience in Railway accounting work and be capable of taking full charge of any section of a Railway Accounting organisation.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/16204.

LOCOMOTIVE DRAUGHTSMAN required by the Iraqi State Railways for a tour of 3 years in the first instance. Salary: Iraq dinars 50 a month plus high cost-of-living allowance between I.D.12 and I.D.15 a month according to number of dependants. (I.D.1 = £1.) Free passages. The post is not pensionable but there is a Provident Fund. Candidates must have served an apprenticeship in the workshops of a British Railway or firm of locomotive builders, and have a good knowledge of modern steam locomotive design and construction. A knowledge of diesel traction would be an advantage. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/12841.

Burma State Railways

URGENT vacancies exist for (a) Civil Engineers (Senior and Junior) and (b) Mechanical Engineers in the Burma State Railways. Candidates should be British subjects aged preferably between 25 and 40, and should possess an Engineering degree or equivalent qualifications plus for (a) at least seven years (Senior) and two years (Junior) practical experience on Civil Engineering Works. For some of the Senior posts experience of railway maintenance is essential. This would also be an advantage for the other posts; (b) apprenticeship or pupilage with a main-line Railway and at least two years' subsequent experience in the Locomotive or Carriage and Wagon Departments.

Contract for 3 years. Salary, at flat rate throughout and fixed according to age on appointment, from Rs. 850 a month for age 25 (£765 a year) to Rs. 1,700 a month for age 40 (£1,530 a year). Free passage to and from Burma and for families should conditions permit. Bonus on satisfactory termination of contract of £100 or £150 (depending on salary) for each year's service. Free medical attention.

Further particulars and forms of application may be had on request (by postcard) from the Office of the High Commissioner for India, India House, Aldwych, London, W.C.2. Last date for the receipt of applications, June 1, 1946.

SECTIONED PERSPECTIVE VIEW OF LOCOMOTIVE FRONT END. A notable drawing of L.M.S.R. class "7P" 4-6-2 locomotive of the latest type. Reprinted from *The Railway Gazette*, June 15, 1945. *Price 2s. 6d. Post free 2s. 8d.*

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiment. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. *Price 2s. Post free 2s. 3d.*

Locomotive Building Industry in India

TATA LOCOMOTIVE & ENGINEERING COMPANY LTD.

WORKS SUPERINTENDENT required for an up-to-date Locomotive Boiler-building Plant now being established at Jamshedpur, Behar, India.

The post carries a salary of £2,000 to £2,500 per annum. It offers an excellent opportunity to a man of capacity and ambition, with good prospects for a "live" man. The present rate for Indian Income Tax on the salary offered is only about one-half the corresponding rate in the U.K. Passages out and Home will be provided and assistance will be given in arranging passages for the family of a married man. Quarters at a reasonable rent will be provided and free medical attention. One month's leave on FULL PAY yearly.

Applicants, who should be between 35 and 45 years of age, should have had a sound training and good subsequent experience in locomotive building, including boilers, and should be ready and able to take responsibility.

Applications, which will be treated in strict confidence and should, if possible, be accompanied by *copies* of testimonials and certificates, should be made to the under-noted address and marked "Works Superintendent." Messrs. Tata Limited, 18, Grosvenor Place, London, S.W.1.

STATION DESIGN. A striking example of modern British practice at the important wayside station of Luton. Reprinted from *The Railway Gazette*, July 7, 1944. *Price 1s. Post free 1s. 2d.*

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffics, with an account of economic problems; the motive power used; and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. *Price 1s. Post free 1s. 2d.*

by Mr. O. V. Bulleid, the company's Chief Mechanical Engineer, with a view to easy assembly and maintenance. The bodywork is of steel, providing the maximum seating room within the limits of the Southern Railway loading gauge. The vehicles can be worked unrestrictedly over the Southern Railway electrified areas and will be used where overcrowding is acute.

Additional G.W.R. Diesel Service.—A new diesel railcar journey was introduced in the G.W.R. summer timetables on May 6. The car leaves Maidenhead at 9.52 a.m. on weekdays and arrives at Reading at 10.9 a.m., not calling at Twyford. Connections are made at Reading with the 9.45 a.m from Paddington to Oxford and the North, and with all stations to Basingstoke.

North British Locomotive Co. Ltd.—Net profit for 1945, after providing £100,000 for taxation and £50,000 for reserve, was £57,404, compared with £42,343 for 1944. In 1944 the provision for taxation was £150,000, and the same sum as in 1945 was put to reserve. The Directors recommend maintenance of the ordinary dividend at 5 per cent. The carry-forward is £54,721, against £51,380.

Road Accidents in March, 1946.—The return issued by the Ministry of Transport of the number of persons reported to have died, or to have been injured, as a result of road accidents in Great Britain during the month of March last shows 350 deaths (compared with 396 in March, 1945), 2,537 seriously injured (compared with 2,168 in March, 1945), and 8,147 slightly injured (compared with 6,554 in March, 1945).

"Dakota" Aircraft for Railway Air Services.—The first "Dakota" aircraft made available to Railway Air Services Limited by the Ministry of Civil Aviation are to be introduced on the Glasgow-Belfast and Glasgow-London routes on and from May 20. Three services daily (except Sundays) will be operated each way between Glasgow and Belfast, and one service between Glasgow and London. The greater seating capacity of the "Dakotas" will mean that three times as much traffic as at present can be carried over both these routes. The introduction of the new aircraft will be accompanied by a substantial reduction in the Glasgow-London air fare. The single fare will be cut from £9 to £7, and the return fare from £14 10s. to £12 10s.

Stewarts and Lloyds Limited.—A dividend on the deferred stock of 12½ per cent. is recommended for 1945, the same as in the previous year. The net profit for 1945 of £1,565,221 includes profits of the Stanton Ironworks Co. Ltd. for the year ended March 31, 1945, and also the profits of that company for the nine months ended December 31, 1945, £195,302.

"Wayfarer" Aircraft for Channel Islands Airways.—Channel Islands Airways has on order a number of Bristol 36-seat "Wayfarer" aircraft, the first of which it is hoped to place in regular service in July. A "proving" flight of a prototype "Wayfarer" was made on May 9 from the Bristol Aeroplane Company's Works at Filton to Guernsey, Jersey, and back to Croydon. The flight coincided with the first anniversary celebrations of the liberation of the Channel Islands. Among the passengers were Mr. K. W. C. Grand, Chairman of Channel Islands Airways Limited and Assistant General Manager, Great Western Railway; and Commander G. O. Waters, Managing Director of Channel Islands Airways Limited.

L.M.S.R. Lichfield Accident Report.—In his report on the accident which occurred at Trent Valley Station, Lichfield, L.M.S.R., on January 1, when a fish train ran into the rear of a local passenger train standing in the station, Lt.-Colonel E. Woodhouse, Inspecting Officer of Railways, Ministry of Transport, states that three factors contributed to the accident. These were: the buckling of a rod under the signal box, which allowed Signalman W. M. Williams to put a lever normal, so releasing No. 4 signal; the failure of the facing point bolt to disengage in No. 33 points, thus preventing its return to normal; the alleged failure of the detector to prevent No. 4 home signal responding to its lever, or, alternatively, the non-observance of that signal at danger by Driver G. F. Read, driver of the fish train. Colonel Woodhouse states that he has formed the opinion that in all probability the up fast home signal, No. 4, remained a danger at the material time and that Driver Read failed to observe and to obey its indication. "If that was so," he adds, "he must share responsibility for the accident, but there are extenuating circumstances." Driver Read is 56, with 19 years' service as a driver, and has a very good record.

The Wantage Locomotive.—After the closure of the Wantage Tramway (which we recorded in our March 1 issue, page 224), energetic efforts were made by Mr. R. L. P. Jowitt, of Petersfield, to secure the permanent preservation of the old locomotive *Shannon*. He communicated with everyone likely to be interested, and even achieved a leader in *The Times*. His efforts have now been crowned with success, as the locomotive has been acquired by the Great Western Railway for permanent preservation, mainly through the interest of Mr. F. W. Hawksworth, Chief Mechanical Engineer.

Visits to Paris Trade Fair.—British industrialists wishing to visit the Foire de Paris, from May 25 to June 10, should apply at once to the Commercial Attaché at the nearest French Consulate, who will issue a *Carte de Légitimation*. With this card, the French visa for the passport will be granted immediately, without the delay of referring to Paris. The Foire de Paris has a special accommodation service, to which application should be made for accommodation in Paris, letters being addressed to the Foire de Paris, Service de Logement, 23 Rue Notre-Dame des Victoires, Paris (2e). Tickets can be booked through Cook's-Wagon Lits, and accommodation arranged at the same time. Rooms in Paris will cost fr. 120 to fr. 250 a day.

Forthcoming Meetings

May 25 (*Sat.*).—The Permanent Way Institution (Manchester and Liverpool Section). Visit to Ship Canal Company.

Railway Stock Market

Business in stock markets has been on an exceptionally heavy scale; the latest American loan news was followed by activity in all sections, and dealings recorded on Monday amounted to 18,878, the highest total since daily markings of business have been officially counted. British Funds were particularly active on the Government's latest cheaper money moves, and there was a general advance in leading industrials, especially in cases where the removal of the ban on conversion operations in respect of debentures and other stocks carrying 4 per cent. interest or under, opens the way for future saving in interest charges. Sentiment in regard to industrials was also aided by the latest export trade news, although it is realised that in many directions trade expansion is hampered by the serious coal shortage.

The nationalisation groups participated strongly in the upward trend; iron and steels showed a further rally on the view that in many instances prices seem attractive bearing in mind that only some sections of the industry are threatened by nationalisation. Colliery shares were favoured because of the large yields; but outstanding has been a general upward movement in home rails, partly because of the good yields, and partly because of the growing belief that current prices must be regarded as attractive, assuming that if, as is generally expected, there is a fair compensation basis for stockholders in the event of nationalisation. The assumption in many quarters is that ultimately prices are likely to be substantially above current levels.

Demand for home rails was also due to some extent to the belief that before long the Government is likely to agree to an increase in railway charges to compensate for the higher cost of materials and labour, etc. The need for this has been emphasised by the published traffic returns, and is inevitable whatever the future of the railways in respect of nationalisation.

Home rails were inclined to ease after the reply in Parliament that the Minister of Transport is not at the moment in a position to make any statement on the question of higher railway charges. It is recognised that under the existing control agreement the latter will have no influence on the rental available for dividend purposes. Neither, as has been pointed out previously in these notes, should the trend of traffics influence the basis of nationalisation compensation, bearing in mind the just claim of the railways to higher charges, particularly as they have shown only a very moderate increase during the war years. Apart from the good rally in junior stocks, senior preference and prior charges stocks have also participated in the rise, yield considerations, recognition of their good investment merits, and also the rising trend in British Funds and other high class investments, being factors attracting buyers.

Great Western has been in steady demand, attention being drawn to the good dividend record of this stock over a long period of years; the current level of 61, compares with 56¾ a week ago, and in fact exceeds the highest level (60¾) recorded last year. Incidentally, junior stocks of the other main-line railways are still below last year's highest levels. Great Western 5 per cent. preference has risen on the week from 113 to 115½, the guaranteed stock from 123½ to 125 and the 4 per cent. debentures from 113 to 114.

L.M.S.R. was 28⅝, comparing with 27⅞ a week ago, the 1923 preference 59, compared with 57½ and the senior preference 82½, compared with 80¼. A rise from 27¾ to 28½, was recorded in L.N.E.R. second preference, the first preference also improving from 57 to 58, and the first guaranteed rose further to 105, the second guaranteed to 98, and the 4 per cent. debentures to 111.

Southern deferred also improved from 21⅛ to 22, the preferred from 77½ to 79, the 5 per cent. preference from 113 to 115½ and the 4 per cent. debentures were higher at 113. Exceptionally, London Transport "C" at 58 was a point down on balance.

Argentine rails showed a general upward movement with debenture stocks of the leading companies attracting on yield considerations. Buenos Ayres Great Southern improved from 11 to 12½, the 5 per cent. preference from 25¼ to 26½ and the 4 per cent. debentures from 69 to 70xd. Buenos Ayres Western 4 per cent. debentures rose from 64 to 66¼, and Central Argentine 4 per cent. debentures from 61¼ to 64½. Buenos Ayres & Pacific consolidated debentures moved up to 64¼ and the 1912 debentures 46.

Mexican Railway 6 per cent. debentures were 66. Elsewhere, Antofagasta improved to 9¾ and San Paulo ordinary to 54.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1944 5	No. of Week	Aggregate traffics to date: Totals 1945 6	Aggregate traffics to date: Totals 1944 5	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: May 14, 1946
				£	£		£	£	£				
South & Central America	Antofagasta	834	5.4.46	34,470	– 7,710	18	595,390	544,410	+ 50,980	Ord. Stk.	12	8¼	10
	Arg. N.E.	753	4.5.46	ps.281,500	– ps.4,800	44	ps.13,019,300	ps.13,059,200	– ps.39,900	,,	10	5¼	5
	Bolivar	174	Apr., 1946	4,287	– 610	17	18,402	20,965	– 2,563	6 p.c. Deb.	8½	5½	6½
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	28
	B.A. Pacific	2,771	4.5.46	ps.2,382,000	+ ps.12,000	44	ps100,664,000	ps.96,704,000	+ ps.3,960,000	Ord. Stk.	7	5	6¼
	B.A.G.S.	5,080	4.5.46	ps.3,498,000	+ ps.353,000	44	ps157,762,000	ps.148,225,000	+ ps.9,537,000	Ord. Atk.	13⅜	10½	12½
	B.A. Western	1,924	4.5.46	ps.1,008,000	– 70,000	44	ps.52,853,000	ps.49,757,000	+ ps.3,096,000	,,	12½	9½	11¾
	Cent. Argentine	3,700	4.5.46	ps.3,108,355	+ ps.360,655	44	ps138,934,734	ps.127,335,450	+ ps.11,599,284	,,	9¼	7	8
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2⅞	3½
	Cent. Uruguay	970	4.5.46	44,247	+ 9,597	44	1,727,484	1,526,336	+ 201,148	Ord. Stk.	7½	4	7½
	Costa Rica	262	Mar., 1946	30,768	– 34	38	252,872	203,304	+ 49,568	Stk.	16½	13	12½
	Dorada	70	Mar., 1946	26,161	+ 2,061	13	85,975	82,705	+ 3,270	1 Mt. Deb.	103	102	101½
	Entre Rios	808	4.5.46	ps.395,700	+ ps.2,900	44	ps.18,676,500	ps.17,431,500	+ ps.1,245,500	Ord. Stk.	7½	4½	5½
	G.W. of Brazil	1,030	4.5.46	24,400	– 1,400	18	540,300	482,600	+ 57,700	Ord. Stk.	30 –	23 6	20 –
	Inter. Ctl. Amer.	794	Mar., 1946	$990,479	+ $192,442	13	$2,914,465	$2,280,411	+ $634,284	—	—	—	—
	La Guaira	22¾	Apr., 1946	5,488	– 1,018	17	22,338	22,416	– 78	5 p.c. Deb.	78	70	61½
	Leopoldina	1,918	4.5.46	53,564	+ 12,765	18	1,023,454	800,761	+ 222,693	Ord. Stk.	4½	3½	3¾
	Mexican	483	7.5.46	ps.716,200	+ ps174,100	18	ps.15,280,900	ps.11,211,900	+ ps.4,069,000	Ord. Stk.	½	½	2
	Midland Uruguay	319	Mar., 1946	15,555	– 2,295	37	163,841	156,831	+ 7,010	—	—	—	—
	Nitrate	382	30.4.46	10,138	– 4,206	17	75,908	58,757	+ 17,151	Ord. Sh.	75 6	67 6	76 3
	N.W. of Uruguay	113	Mar., 1946	4,444	– 1,384	37	49,140	51,036	– 1,896	—	—	—	—
	Paraguay Cent.	274	3.5.46	₲57,952	+ ₲1,618	44	₲2,653,775	₲2,633,610	+ ₲20,165	Pr.Li.Stk.	79⅞	77	75½
	Peru Corp.	1,059	Apr., 1946	149,091	+ 23,048	40	1,401,933	1,296,522	+ 105,411	Pref.	10⅜	7½	10¼
	Salvador	100	Mar., 1946	c 175,000	– c 27,000	36	c 1,255,000	c 1,159,000	+ c 96,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60¾	50½	56
	Taltal	156	Apr., 1946	5,180	+ 2,270	44	33,200	26,280	+ 6,920	Ord. Sh.	17 –	10 6	16 3
	United of Havana	1,301	5.5.46	74,237	+ 23,097	44	2,556,817	2,405,532	+ 151,285	Ord. Stk.	3	1	1¾
	Uruguay Northern	73	Mar., 1946	1,477	– 361	37	15,691	14,295	+ 1,396	—	—	—	—
Canada	Canadian National	23,569	Mar., 1946	6,520,600	– 888,600	13	18,471,800	20,168,600	– 1,696,800	—	—	—	—
	Canadian Pacific	17,037	7.5.46	1,009,000	– 190,000	18	19,751,000	21,205,400	– 1,454,400	Ord. Stk.	24	14⅜	22¼
Various	Barsi Light†	202	Mar., 1946	34,282	+ 7,537	52	312,315	269,828	+ 42,487	Ord. Stk.	131	123	111
	Beira	204	Feb., 1946	63,146	– 9,155	20	337,628	386,578	– 48,950	—	—	—	—
	Egyptian Delta	607	10.4.46	16,709	– 1,367	2	16,709	18,076	– 1,367	Prf. Sh.	10	8⅛	6
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55½	71½
	Mid. of W. Australia	277	Mar., 1946	18,366	+ 431	36	152,484	173,275	– 20,791	Inc. Deb.	97½	85	75
	Nigeria	1,900	Feb., 1946	350,919	– 35,117	46	3,153,983	3,515,685	– 361,702	—	—	—	—
	Rhodesia	2,445	Feb., 1946	465,118	+ 8,293	20	2,476,064	2,526,805	– 50,021	—	—	—	—
	South African	13,301	6.4.46	1,088,441	+ 128,532	1	1,035,894	902,733	+ 133,161	—	—	—	—
	Victoria	4,774	Jan., 1945	1,204,720	– 75,151	—	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee